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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL 1849.

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TO READERS AND CORRESPONDENTS.

Though we have largely exceeded our limits, it has been necessary to postpone until our next number, several original articles, two Reviews, and a number of Bibliographical Notices prepared for the present one.

We must request our correspondents who desire their communications to appear in the July No., to forward them early, as that No. will be put to press on the 1st of May.

The following works have been received:—

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Second series, Vol. XIII. London, 1848. (From the Society.)

On the Influenza, or Epidemic Catarrhal Fever of 1847–8. By Thomas Bevill Peacock, M. D., L.R.C.P., &c. &c. London, John Churchill, 1848. (From the Author.)

The Quarterly Journal of the Chemical Society of London. Edited for the Society by Edmund Ronalds, Ph. D. Jan. 1849. (In exchange.)

Summary of the Transactions of the College of Physicians of Philadelphia. Sept. 6, 1848, to Jan. 2, 1849, inclusive. (From the College.)

Report of a Joint Special Committee of Select and Common Councils, (appointed on the 7th Dec. 1848,) to whom was referred certain queries contained in a circular letter from the American Medical Association, on the subject of Special Hygiene. Published by order of Councils. Philadelphia, 1849. (From C. A. Poulson, Esq., Chairman of Committee.)

Obstetrics: the Science and the Art. By Charles D. Meigs, M. D., Prof. of Med. and the Diseases of Women and Children in Jefferson Medical College. With 121 illustrations. Philadelphia. Lea & Blanchard, 1849. (From the Publishers.)

On the Cryptogamous origin of Malarious and Epidemic Fevers. By J. K. Mitchell, A. M., M. D., Prof. of Pract. Med. in the Jefferson Medical College. Philadelphia, Lea & Blanchard, 1849. (From the Author.)

Manual of Physiology. By William Senhouse Kirkes, M. D., assisted by James Paget, Lecturer on General Anatomy and Physiology at St. Bartholomew's Hospital. With 118 illustrations on wood. Philadelphia, Lea & Blanchard, 1849. (From the Publishers.)

An Introduction to Practical Chemistry, including Analysis. By John E. Bowman, Demonstrator of Chemistry in King's College, London. Philadelphia, Lea & Blanchard, 1849. (From the Publishers.)

A Practical Treatise on the Domestic Management and most important Diseases of advanced life. With an Appendix, containing a series of cases illustrative of a new and successful mode of treating lumbago and other forms of chronic rheumatism, sciatica, and other neuralgic affections, and certain forms of Paralysis. By Geo. E. Day, M. D., F.R.C.P., &c. Lea & Blanchard, 1849. (From the Publishers.)

Chemical and Pharmaceutical Manipulations. A Manual of the Mechanical and Chemico-Mechanical operations of the Laboratory, containing a complete description of the most approved apparatus, with instructions as to their application and management, both in manufacturing processes, and in the more exact details of analyses and accurate research, for the use of chemists, druggists, teachers and students. By Campbell Morfit, Practical and Analytic Chemist, &c. &c., assisted by Alexander Muckle, Chemical Assistant in Prof. Booth's Laboratory. With 420 illustrations. Philadelphia, Lindsay & Blakiston, 1849. (From the Publishers.)

Some account of an Epidemic Cerebro-Spinal Meningitis, which prevailed in Montgomery, Ala., in the winter and spring of 1848. Read before the Medical Society of Montgomery, Ala. in 1848. By S. Ames, M. D. (From the Author.)

Notes on the Medical Application of Electricity. By Wm. F. Channing, M. D. Boston, 1849. (From the Author.)

Memorial of the American Statistical Association for a Sanitary Survey of

the State (Massachusetts). House Document, Nov. 16, 1848. (From Dr. E. Jarvis.)

Seventh Annual Report to the Legislature relative to the Registry, and returns of Births, Marriages, and Deaths in Massachusetts, for the year ending April 30th, 1848. By Wm. B. Calhoun, Secretary of the Commonwealth. Boston, 1848. (From E. Jarvis, M. D.)

Report of the Board of Visitors and of the Superintendent of the Boston Lunatic Asylum, for 1848. Boston, 1849. (From Dr. E. H. Stedman.)

Report of the consulting Physicians of the city of Boston in relation to the action of Cochituate Water upon Mineral Substances. Boston, 1848. (From E. Jarvis, M. D.)

General Abstract of the Bills of Mortality for the City of Boston, (for the years 1844, 5, 7, 8,) agreeably to the Records kept at the Health Office. (From Dr. Jarvis.)

Report of the Pennsylvania Hospital for the Insane, for the year 1848. By Thomas S. Kirkbride, M. D., Physician to the Institution. Philadelphia, 1849. (From the Author.)

Sixteenth Annual Report of the Trustees of the State Lunatic Hospital at Worcester. Dec. 1848. (From Dr. E. Jarvis.)

Report of the Joint Committee of the Legislature of Massachusetts, appointed April 20th, 1848, on the Subject of Insanity in the State, and directed to sit during the recess of the Legislature, and to report at the early part of the Session of 1849. Boston, 1849. (From Dr. E. Jarvis and Dr. Stedman.)

Annual Report of the Officers of the New Jersey State Lunatic Asylum, at Trenton, for the year 1848. Trenton, 1849. (From H. A. Buttolph, M. D.)

Twenty-first Annual Report of the President and Directors of the Western Asylum to the Legislature of Virginia, with the Report of the Superintendent and Physician, for 1848. Staunton, 1849.

Anniversary Discourse, before the New York Academy of Medicine, Nov. 9, 1848. By James R. Manley, M. D. Published by order of the Academy. New York, 1849.

The Plea of Humanity in behalf of Medical Education. The Annual Address delivered before the New York State Medical Society, and Members of the Legislature, at the Capitol, Feb. 6, 1849. By Alexander H. Stevens, M. D., President of the Society, &c. &c. &c. Albany, 1849. (From the Author.)

Memoir of C. A. Luzenberg, M. D., President of the Louisiana Medico-Chirurgical Society. By Thomas M. Logan, M. D. Published by the Society. New Orleans, 1849. (From the Author.)

A Case of Carotid Aneurism, and some Remarks on the Diagnosis of that Disease. Published in the Southern Medical and Surgical Journal, with Dr. Paul F. Eve's comments thereon, and a reply. By James M. Green, M. D. Macon, 1849. (From the Author.)

Report of the Board of Inspectors of the Western Penitentiary of Pennsylvania for the year 1848, with the accompanying documents. Pittsburg, 1849. (From T. F. Dale, M. D.)

Sixth Annual Report of the Managers of the State [New York] Lunatic Asylum. Made to the Legislature Feb. 1, 1849. Albany, 1849. (From Dr. T. R. Beck.)

Annual Report of the Keeper of the Kentucky Penitentiary. 1848.

Report of the Standing Sanatory Committee of the Board of Health of the City of New York on the subject of Asiatic Cholera, at present prevailing at the Quarantine establishment of New York, at Staten Island. New York, 1848.

Report of the Surgeon-General to the Secretary of War, at the opening of the Second Session of the Thirteenth Congress. Washington, 1848–49. (From Thomas Lawson, M. D., Surgeon-General.)

Circular issued Feb. 7, 1849. (From the Surgeon-General.)

Constitution and By-Laws of the Medical Society of Alleghany County, Pa. Pittsburgh, 1849. (From the Society.)

Transactions of the Medical Society of the State of New York. Vol. VII., P. 3. Albany, 1849. (Frem the Society.)

Practical Observations on the Use of Inspissated Ox-gall in the Treatment of Various Diseases. By Charles Day, M. D. London, 1849. (From the Author.)

Transactions of the Medical Association of Southern Central New York, convened at Ithaca, June 1848. (From the Society.)

Treatise on Dislocations of the Shoulder. By GEORGE O. JARVIS, M. D., author of Lectures on Fractures and Dislocations, &c. &c. Together with important cases illustrating the benefits of the adjuster. Compiled by GEO. KELLOGG, A. M. Birmingham, 1848. (From the Author.)

Introductory Lecture delivered before the Class of the Medical Department of the St. Louis University. Session 1848—9. By JAMES BLAKE, M. D., Prof. of Anatomy. Published by the Class. St. Louis, 1848. (From the Author.)

Medical Systems, Medical Science, and Empiricism. An Introductory Lecture before the Albany Medical College, delivered Oct. 3, 1848. By THOMAS HUN, M. D., Prof. Inst. Med., Albany, 1848. (From the Author.)

A Lecture Introductory to a Course on Obstetrics, and the Diseases of Women and Children, delivered Nov. 5th, 1848. By GUNNING S. BEDFORD, M. D., Prof. Obst. and Diseases of Women and Children, &c. New York, 1848. (From the Author.)

Introductory Lecture to the Course of Clinical Instruction in Surgery, at the Pennsylvania Hospital. Delivered Nov. 15, 1848. By GEO. W. NORRIS, M. D., one of the Surgeons of that Institution. Published by the Class. Philadelphia, 1848. (From the Author.)

An Address delivered at the opening of the Rock Island Medical School, Nov. 7, 1848. By M. L. KNAPP, M. D., Prof. Mat. Med. and Therap., Chicago, 1849.

Catalogue of the Trustees, Officers, and Students of the University of Pennsylvania. Session 1848–49. Philadelphia, 1849. (From the Faculty.)

Forty-second Annual Circular and Catalogue of the Medical Department of the University of Maryland. Session 1849–50. Baltimore, 1849. (From the Faculty.)

Second Annual Circular of the Maryland Medical Institute. Baltimore, 1849.

Catalogue and Circular of Albany Medical College. Albany, 1849.

Second Annual Report of the Regents of the University, on the Condition of the State Cabinet of Natural History, with Catalogues of the same. Made to the Senate, Jan. 12, 1849. Albany, 1849. (From T. R. Beck, M. D.)

Report of the Select Committee of the House of Representatives, to whom was referred the Memorial of WM. T. G. MORTON, asking compensation from Congress for the discovery of the Anæsthetic or pain subduing property of sulphuric ether. Dr. T. O. EDWARDS, Chairman. House Document, Report No. 114.

On a Suction-tractor; or a new Mechanical power, as a substitute for the Forceps in Tedious Labors. By Prof. SIMPSON. Edinburgh, 1849. (From the Author.)

The following Journals have been received in exchange:—

Revue Médico-Chirurgicale de Paris. Sous la direction de M. MALGAIGNE. Dec. 1848; Jan., Feb., 1849.

The Edinburgh Medical and Surgical Journal. Jan. 1849.

The British and Foreign Medico-Chirurgical Review. Jan. 1849.

The London Medical Gazette. Dec., 1848; Jan., Feb., 1849.

The Monthly Journal and Retrospect of the Medical Sciences. Edited by GEO. E. DAY, F.R.C.P.L., A. FLEMING, M. D., and W. T. GARDNER, M. D. Jan. Feb., March, 1849.

The Half-Yearly Abstract of the Medical Sciences. Edited by W. H. RANKING, M. D. Vol. VIII. July to Dec., 1848.

The British Record of Obstetric Medicine and Surgery, and Diseases of Women and Children, &c. &c.; to which is added a Library of Obstetric, Medical, and Surgical rare Monographs, &c. Edited by CHARLES CLAY, M. D. Manchester. Jan. to December, inclusive, 1848.

Provincial Medical and Surgical Journal. Edited by ROBERT JAMES NICHOLL STREETEN, M. D, F.L.S. Foreign Editor, WM. H. RANKING, M. D. Dec. 1848; Jan., Feb., 1849.

Dublin Quarterly Journal of Medical Science. Feb. 1849.

Dublin Medical Press. Dec. 1848; Jan., Feb., 1849.

British American Journal of Medical and Physical Science. Edited by Archibald Hall, M. D. Jan., Feb., March, 1849.

The Journal of Psychological Medicine and Mental Pathology. Edited by Forbes Winslow, M. D. Jan. 1849.

The Retrospect of Medicine: being a Half-Yearly Journal, containing a Retrospective view of every discovery and practical improvement in the Medical Sciences. Edited by W. Braithwaite, Lecturer on Obstetric Medicine. July to Dec. 1848.

The Charleston Medical Journal and Review. Edited by P. C. Gaillard, M. D., and H. W. Desaussure, M. D. Jan., March, 1849.

The Ohio Medical and Surgical Journal. Edited by John Butterfield, M. D., Prof. Pract. Med. in Starling Med. Coll. Jan., 1849.

The North-Western Medical and Surgical Journal. Edited by W. B. Herrick, M. D., and John Evans, M. D. Dec. 1848; Jan. 1849.

The New Jersey Medical Reporter and Transactions of the New Jersey Medical Society. Edited by Joseph Parrish, M. D. Jan. 1849.

The New York York Journal of Medicine, and the Collateral Sciences. Jan., March, 1849.

The New Orleans Medical and Surgical Journal. Edited by A. Hester, M. D. Jan., March, 1849.

The Southern Medical and Surgical Journal. Edited by Paul F. Eve, M. D. Jan., Feb., March, 1849.

Buffalo Medical Journal and Monthly Review of Medical and Surgical Science. Edited by Austin Flint, M. D. Jan., Feb., March, 1849.

The Medical Examiner and Record of Medical Science. Edited by H. G. Smith, M. D., and David H. Tucker, M. D. Jan., Feb., March, 1849.

The Western Journal of Medicine and Surgery. Edited by L. P. Yandell, M. D. Jan., Feb., March, 1849.

The American Journal of Pharmacy, published by authority of the Philadelphia College of Pharmacy. Edited by Joseph Carson, M. D., and Wm. Procter, Jr., Prof. Pharm., &c. Jan. 1849.

The American Journal of Insanity. Edited by the Officers of the New York State Lunatic Asylum, Utica. Jan. 1849.

The American Journal of Science and Arts. Conducted by B. Silliman, and B. Silliman, Jr., and James D. Dana. Jan., March, 1849.

The American Journal and Library of Dental Science. Edited by C. A. Harris, M. D., A. Westcott, M. D., and W. H. Dwinelle, D. D. S. Oct. 1848; Jan. 1849.

The Boston Medical and Surgical Journal. Edited by J. V. C. Smith, M. D. Jan. Feb., March, 1849.

The Western Lancet and Hospital Reporter. Edited by L. M. Lawson, M. D., and J. P. Harrison, M. D., &c. Jan., Feb., March, 1849.

The Annalist: a Record of Practical Medicine in the city of New York. Edited by N. S. Davis, M. D. Jan., Feb., March, 1849.

St. Louis Medical and Surgical Journal. Edited by Drs. Linton, Moore, McPheeters, and McDowell. Jan., Feb., 1849.

Communications intended for publication, and Books for Review, should be sent, *free of expense*, directed to Isaac Hays, M. D., Editor of the American Journal of the Medical Sciences, care of Messrs. Lea & Blanchard, Philadelphia. Parcels directed as above and sent (carriage paid) under cover, to John Miller, Henrietta Street, Covent Garden, *London;* or to Wiley & Putnam, *New York;* or W. D. Ticknor, *Boston;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay. We particularly request the attention of our foreign correspondents to the above, as we are often subjected to unnecessary expense for postage and carriage.

All remittances of money, and letters on the *business* of the Journal, should be addressed *exclusively* to the publishers, Messrs. Lea & Blanchard.

☞ The advertisement-sheet belongs to the business department of the Journal, and all communications for it should be made to the publishers.

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XI. Report made to the House of Representatives of Massachusetts on the Commission of Lunacy. House Doc. No. 72, pp. 10. Boston, 1846.

First Report to the Legislature of Massachusetts by the Commissioners appointed to inquire into the condition of Idiots within the Commonwealth. By Samuel G. Howe. House Doc. No. 152, pp. 20. 1849.

Second Report to the Legislature of Massachusetts by the Commissioners appointed to inquire into the condition of Idiots within the Commonwealth. By S. G. Howe. pp. 147. Boston, 1848. Senate Doc.

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XV. Manual of Physiology. By William Senhouse Kirkes, M. D., assisted by James Paget, Lecturer on General Anatomy and Physiology at St. Bartholomew's Hospital. With one hundred and eighteen illustrations on wood. Philadelphia, Lea and Blanchard, 1849. 12mo. pp. 552. - 461

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ERRATUM.

Page 14, 9th line from top, for *novelty* read *mortality*.

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Art. I.—*On the Intimate Structure and History of the Articular Cartilages.*

By Joseph Leidy, M. D. (With two plates.)

The structures entering into the composition of a movable joint, or articulation of the animal body, exhibit the same wonderful adaptation to the end in view, which we see displayed everywhere else in nature.

Joints are absolutely necessary to locomotion, in an animal possessing a skeleton or hard basis of support for the softer organs, for it is by means only of the different segments of the skeleton, whether internal as in the vertebrata, or external as in insecta, crustacea, &c., moving upon each other, through the power residing in the muscles, that all locomotion is produced. If we conceive of one of the higher mammalia, say of man, formed with a skeleton in one piece, at once it alters his whole character. He becomes fixed to one position, the muscles ordinarily concerned in acting upon the segments of the skeleton are no longer of any use, and may be dispensed with. Respiration as ordinarily carried on must cease, the nerve centres concerned in directing the movements would be no longer required,—in fact the animal could not exist as such; but if its vascular system could be prolonged into a soil of nutritive matter, and respiration be carried on at the surface of the body, although ceasing to exist as an animal it would do so as a plant.

If the skeleton be dispensed with, we may have a body capable of moving from place to place, by alternate contraction of different parts of the mass, as in a slug (Limax), but the sphere of locomotion of such an animal is necessarily very limited, and could not exist with the well characterized intelligence of an animal higher in the scale.

The movable articulations of the human body are numerous, and present every variety of form of surface in their construction. The articulating surfaces are usually formed upon the expanded extremities of the bones, but in no instance, in a normal condition, do we find the osseous structure entering immediately into their formation, but the opposed surfaces of the articular

extremities of the bones are covered by a lamina of elastic substance, the articular cartilage, which possesses a degree of vitality inferior to that of bone. To this form of cartilage I have more particularly directed my attention, and its history and intimate structure are the subjects of the present memoir.

The perfectly formed or adult articular cartilages are closely moulded upon the articular extremities of the bones, and are inseparably adherent until removed by maceration in dilute muriatic or other acid, when they are readily detached, presenting a surface corresponding to that of the bone from which they were removed; being rough, and presenting beneath a lens, a number of ridges, conical projections and pits, all of which are for the closer adaptation of the structure to the bone. From the foregoing facts, these cartilages are called also cartilages of incrustation.

The free surface of the articular cartilages, or that presented to the interior of the joint is very smooth and glistening, exactly fits the surface of the opposed cartilage, and leaves no interval, except where interarticular cartilages, or synovial doublings, are introduced, and is kept constantly bathed in synovia, the peculiar unctuous serous fluid of the articulations, which, added to the elasticity of the structure, permits these surfaces to move freely and easiiy upon each other with the least possible degree of friction and attrition, and with the least liability to danger of abrasion; all of which would occur to a comparatively great extent, if the harder and less elastic surfaces of the bones were to come in immediate contact.

The articular cartilages vary in thickness in the different articulations, being thickest in those which are most movable, and most subject to attrition. The greatest thickness they reach, which is in the knee or hip-joint, is from one and a half to two lines. An articular cartilage also varies in thickness, in different parts of its extent, and thus its two surfaces are never entirely parallel with each other, for, as a general rule, upon a convex articular face of bone we find the cartilage forming a thin edge at its circumference, and gradually becoming thicker towards the centre, and upon a concave surface the reverse arrangement taking place, being thin in the centre, and gradually increasing in thickness towards the circumference, where it is again reduced to a thin edge.

When separated from the bone, the articular cartilage may be readily bent double without breaking, and in fact it usually requires some force to break it. The course of the fracture is always perpendicular to the surfaces, and the broken edge presents a fibrous appearance, in the same direction, and in some cases it appears laminated, especially near the free surface of the cartilage.

Articular cartilages are of a pearly white colour; where thin they are opalescent or bluish white and translucent; sometimes they have a tinge of yellow, which is occasionally deepened, apparently by the imbibition of colouring matter from the synovia; more rarely they present a pinkish tinge.

From their firmness, toughness, flexibility, and high degree of elasticity, besides being less liable to abrasion or other accident, the articular cartilages

perform an important function in diminishing the violence of blows or shocks, under many circumstances, serving as so many points of reaction when the extremities of the bones are suddenly or violently forced against one another, as in falls upon the feet, &c.

They are totally non-vascular; the arterial vessels in their vicinity, after approaching their attached surface and circumference, turn back to the venous trunks. The vascular circle formed at the circumference of the articular cartilage was called by Wm. Hunter,* the *circulus articuli vasculosus.* The blood-vessels of this circle pass a little way over the edge of the cartilage, and stop a little short of the angle formed by the attachment of the synovial membrane to the latter. These vessels are convoluted, and form loops which are much dilated, an arrangement first pointed out by Mr. Toynbee.† The vessels which approach the attached surface of the cartilage, according to Mr. Toynbee,‡ are numerous and large, and are separated from it by a delicate lamella of bone.

The advantage which the articular cartilages possess in their non-vascularity is very great, in their immunity from the many accidents which a vascular tissue would be liable to in a similar position, where the parts are so much exposed to sources of irritation.

Nor is it probable that lymphatics exist in them; their vital activity is not very great, and if there is any interstitial destruction at all, the molecules so separated, may exosmose from the cartilage dissolved in the effete fluid derived from the nutritive fluid of the tissue.

These cartilages are destitute of nerves;—at least they are perfectly insensible, for I have several times sliced away, wrenched, torn, and twisted the articular cartilage from the head of the tibia of a rabbit and a cat, without the animals evincing the slightest indication of pain, and although I have followed the course of filaments from branches of the articular nerves as far as the fine areolar tissue at the edge of the articular cartilages, yet I have never been able to detect the slightest appearance of a filament entering the cartilaginous structure.

Intimate Structure of the Articular Cartilaginous Tissue.—The older anatomists considered the articular cartilage to be homogeneous in its character, or to be composed of fibres arising from the surface of the bone, and terminating at the free surface of the cartilage, which condition was proved by the latter always breaking in a determinate direction, the fractured edge presenting a fibrous or columnar appearance, comparable to the arrangement of the enamel structure upon the body of the tooth, and from its being resolvable into

* Of the Structure and Diseases of Articular Cartilages, by Wm. Hunter, Surgeon. Phil. Trans., vol. xlii. 1742–43, p. 514. London.

† On the Organization and Nutrition of Non-vascular Animal Tissues. Phil. Trans., 1841, p. 159. London.

‡ Ibid., p. 173.

separated filaments by maceration. How far this opinion is true will be seen in the course of our investigations.

When a thin section of the articular cartilage is submitted to the microscope, two distinct parts, or structures, are observable in it; organic cells, or cartilage cells or corpuscles, and an intercellular substance, or matrix.*

Cartilage Corpuscles, (Plates I. and II.)—These bodies are solid nucleolo-nucleated cells, imbedded in the cartilage matrix, and varying in a slight degree in different parts of the articular cartilage. A few of them are single or isolated, but most usually they are found in groups of two, up to twenty-two, the latter being the highest number I met with. The groups are arranged in single, double, triple, or quadruple rows, the direction of which, in the deep part of the cartilage, or that nearest the surface of attachment, is perpendicular (Plate I. Fig. 1, *e*) to the surfaces, for the most part, but as they approach the free surface, they become more or less oblique (*d*) and even irregular, and finally, near the free surface, become parallel (*c*) with the latter, or at right angles with the deeper groups. The arrangement of the cell groups is considered by most modern anatomists to be the cause of fracture of the cartilage, in a determinate direction; perpendicular to the surfaces in the deeper part, and parallel with the same at the free surface. The groups of cells are comparatively few in number in the deep part of the cartilage, or the intervening matrix is in greater abundance, but they gradually increase in number as they approach the free surface, near which they are found quite crowded, and with little intervening matrix.

The deeper groups (Plate I. Figs. 2 and 3) of cells are composed of a greater number of individual cells, than those existing more superficially, and in the stratum of cartilage forming the free surface, (Plate II. Fig. 1,) single or isolated cells are more numerous than in any other part of the cartilage, and the most frequent groups are composed of two or three cells,—rarely a group containing more than six is found.

The cells when single or isolated, are round or elliptical in outline, but when grouped, they are flattened or have the appearance of compression upon the sides presented to each other, and rounded at the circumference of the group, with the two end cells frequently elongated, or even brought to a point.

* A striking analogy exists between the articular cartilaginous structure, and some of the algous forms of vegetable life; thus, the Conferva mucosa? Mert, (*Harvey, Manual British Algæ, London*, 1841,) which is found growing in the little stream running through the swamp at Kaign's Point, N. J., just below Philadelphia, consists of filaments or rows of cells enveloped in a transparent mucoid substance, corresponding to the cell groups and matrix of the articular cartilage. The cells are sometimes filled with endochrome, in other instances the latter is contracted into a mass occupying the centre of the cell, while the interspace is filled with transparent matter, and the endochrome contains a nucleus rendered visible by iodine, in all which respects exhibiting a resemblance to the analogous points of structure of articular cartilage.

In the deeper part of the cartilage, the diameter of the cells in different directions varies but little, and averages the $\frac{1}{2000}$th of an inch in their long diameter, and the $\frac{1}{2270}$th of an inch in their shortest diameter; but in the superficial stratum of cartilage, the cells or groups of cells (Plate II. Fig. 1, and Fig. 2, *a*) are much flattened parallel with the surfaces of the cartilage, appear large and broad when viewed in this direction, and measure upon an average the $\frac{1}{900}$th of an inch long, while the edges of the cells or groups, when viewed in a vertical section of the cartilage (Plate II. Fig. 2 *b*, and Fig. 3,) appear very narrow and lenticulo-linear in outline, and measure in thickness on an average $\frac{1}{2270}$th of an inch.

When a thin section of the cartilage is viewed beneath the microscope, the cell-groups are observed to produce a shaded ring, in their vicinity, in the matrix, and when well-defined, they appear surrounded by a clearer or more translucent wall or outline than the matrix; but when within the focus a little, they appear surrounded by a dark outline or boundary. The outlines of the individual cells, where they approach, or are in contact in the groups, are often indistinct, but may always be distinguished by a shaded line passing in and indicating the interval.

In structure, the cells present points of difference in different parts of the cartilage.

The cell wall appears blended or fused with the intercellular substance, and can be studied as a distinct structure only in the very early condition of the cell.

The cell contents (Plate I. Figs. 2 and 3) usually consists of a translucent homogeneous, or at most an indistinctly and very minutely granular substance, with a more or less central mass of distinctly coarser and darker granular matter, which is generally considered to be the nucleus, but the true character of which will be indicated hereafter. This mass contains a transparent, round or oval nucleus, which is brought into view and coloured brown, by the application of tincture of iodine. The mass also frequently contains fat granules or globules. It is larger in the more superficial than in the deeper cells, measuring in the former on an average the $\frac{1}{290}$th of an inch in diameter, in the latter, the $\frac{1}{3448}$th of an inch. Generally the more superficial layers of cells have not this isolated mass, but are filled (Plate II. Figs. 1, 2, and 3) with finely granular contents interspersed with numerous darker and well-defined granules measuring about the $\frac{1}{21730}$th of an inch. These granules have a black outline, resembling very much fine fat granules, and some of them appear to be really such, for after macerating the cartilage a few days in water, I have noticed a number of them to become aggregated into one or more globules having all the appearances of oil. In these superficial cells the nucleus is large and distinct, round or elliptical, very finely but distinctly granular, and contains about its centre a transparent, but often indistinct nucleolus. In some instances I have noticed the larger and distinct granules of the last mentioned cells forming a circle (Plate II. Figs. 1, 2, and 3), more or less broken

or defined, a short distance from the nucleus, and giving the latter the appearance as if contained within a larger but much less distinct nuclear body. Sometimes this arrangement is quite distinct, but usually it can be but faintly seen.

In other cases the cells of the superficial stratum of the cartilage present the same appearance as the deeper cells, excepting that they are more flattened in a direction parallel to the surface, and the interior granular mass is larger.

In not unfrequent instances, I have noticed in the most superficial stratum of some of the articular cartilages, large, flattened cells, or cell-groups, sometimes with the outline indistinctly delineated, and with nothing distinguishable, excepting finely and indistinctly granular contents, appearing like cells which have been rubbed out in the attrition of the opposed surfaces of the cartilages.

Less frequently I have observed immediately beneath the free surface of the cartilage, and too deep to be influenced by friction, cells (Plate I. Figs. 7 and 8) large and flattened, most usually isolated, or in pairs, finely and indistinctly granular, without apparent nucleus or other more distinct body, or with the apparent formation of a nucleus from the aggregation of the finer granules around a larger, transparent, and very distinct granule or nucleolus. The nuclear appearance was most distinct in the paired cells. What is the character of this variety of articular cartilage cells? Are they cells in the process of development?

Cartilage Matrix, or the intercellular substance of the articular cartilage is, as previously mentioned, in comparison with the cartilage corpuscles, most abundant in its deeper part. It is in thin sections translucent, but not to the same extent as the cell contents between the cell wall and central mass, when the latter exists, and it usually has a faint yellowish hue. Most commonly it has a more or less finely granular appearance, and has generally been described as a homogeneous hyaline, or a finely granular substance, but although it may have the latter as an ultimate arrangement, yet from numerous and carefully repeated observations, I am fully convinced that it has a filamentous structure.* These filaments (Plate I. Fig. 4) are exceedingly fine, but possess considerable strength, and are pretty uniform in size, having an average measurement of the $\frac{1}{25000}$th of an inch in diameter. The largest I measured, which are few in number, measured the $\frac{1}{20000}$th of an inch, the smallest, the $\frac{1}{30000}$th of an inch. When viewed by light thrown upon them with considerable obliquity, they appear faintly granular, each filament composed of a single row of very fine granules. Acetic acid produces no apparent influence upon them; potassa renders them more translucent and faint; and iodine stains them yellow.

* Proceedings Academy of Natural Sciences of Philadelphia, vol. iv. No. vi., 1848.

These filaments lie parallel with one another, they adhere very tenaciously together and under ordinary circumstances are hardly demonstrable, although I have occasionally seen them at the ends of a torn shred of articular cartilage. But if an articular cartilage be taken from a bone which has undergone maceration in diluted muriatic acid to remove its earthy constituents, and be broken, and from the fractured edge a fibre or shred delicate enough to transmit light, be torn off with a pair of fine-pointed forceps, and be submitted in the ordinary manner to the microscope, using the one-fourth or one-twelfth of an inch object glass, numerous, detached and exceedingly delicate, spider-thread-like filaments will be readily detected along the whole length of the sides of the shred. In making this observation it may be frequently noticed, that in tearing off fine shreds of the cartilage, if a group of cells has been in the course of the rupture, it will be torn through, which alone would be sufficient to indicate that the fracture of articular cartilage in a definite direction does not depend upon the arrangement of the cell groups. Besides this, straight fibres are frequently torn loose in the deeper part of the cartilage where the matrix is most abundant without coming in contact on either side with cell groups, and it is now sufficiently evident that the latter have little or no influence in determining the course of fracture, but that it is entirely due to the filamentary arrangement of the matrix.

This filamentous structure of the articular cartilages, though not so intimately understood as presented above, was nevertheless pretty satisfactorily known to exist; "thus," Wm. Hunter says, "we may compare the texture of a cartilage (articular) to the pile of velvet, its fibres rising up from the bone, as the silky threads of that rise from the woven cloth or basis;"* and M. de Làsone also says, "si l'on veut examiner le cartilage qui encroûte la tête du fémur, il faut commencer par diviser verticalement cette tête en deux parties, et les soûmettre ensuite à la coction; alors on reconnoît que l'arcade ou l'espèce de ceintre que forme la portion cartilagineuse qui encroûte l'os, n'est qu'une multitude des petits filets adossés et liés les unes aux autres, tous perpendiculaires au plan de l'os."† Mr. W. Hunter also supposed the perpendicular fibres to be held together by transverse ones so as to "make the whole a solid body," and these "being very tender," in macerating the cartilage, they are destroyed, leaving the perpendicular ones detached from one another. No filaments of this character are to be detected by means of the microscope.

It is well known that if an articular cartilage be forcibly broken through, the fragments will adhere by a thin stratum of membrane covering its free surface. This membranous layer is readily detached by tearing the fragments from each other, and it was considered by the older anatomists to be the synovial membrane. Having all the characters of cartilage, its disposition by

* On the Structure and Diseases of Articular Cartilages. By Wm. Hunter, Surgeon. Philosoph. Transac., vol. xlii. p. 514. London, 1742, '43.

† Second Memoire sur l'organisation des os. Par. M. de Làsone. Mem. de l'Acad. Roy. des Sci., tom. 69, Paris, 1752.

modern anatomists, is believed to depend upon the arrangement of its cell groups, which, as before mentioned, are parallel to the free surface of the cartilage. But instead of its membraniform condition depending upon the course of its cell groups I find it to result from the structure of its matrix, which has also a filamentary arrangement like that of the deeper part of the cartilage, the filaments, however, taking a course at right angles to those of the deeper cartilage and parallel to the surface.

In neither case, then, do the groups or columns of cells determine the course of rupture of the articular cartilage, but on the contrary, it is the filamentary arrangement of the cartilaginous matrix which influences the direction of the cell groups, for in the development of the latter, from the division of the primitive or original cartilage cells, they take the direction in which there is least resistance, which would be in the direction of the length of the filaments of the matrix; hence, in the deeper part of the articular cartilage, as a general rule, we find the cell groups and filaments of the matrix both vertical to the surface but, in the superficial stratum, they are parallel to the surface or at right angles to the former.

Synovial Membrane in its Relation to the Articular Cartilage.—It has been a subject of much discussion among anatomists whether the free surface of the articular cartilage is covered by a reflection of the synovial membrane or not. Wm. Hunter, Sœmmering, Bichat, and many others assert and have tried to demonstrate its existence, but they have evidently mistaken the lamina of cartilage forming the free surface of the articular cartilage for it, while Cruveilhier, Magendie, Velpeau, &c., doubt its existence from pathological and physiological observations. In my observations I have always failed to detect the slightest trace of synovial membrane, in the adult, upon the free surface of the articular cartilage, or even the appearance of a basement membrane; for in all cases, no matter how thin the lamina was which was torn from the articular surface, it presented the indistinctly granular, or, when treated as I have before mentioned, the finely filamentous structure of the cartilage matrix. It appears to terminate at the circumference of the articular cartilage a very little beyond or in advance of the *circulus articuli vasculosus.* In the fœtal state it exists in a very distinct state, covering the surface of the epiphysal cartilages, and may be readily distinguished by its flattened epithelial, nucleated cells, beneath which can also be readily detected a transparent, homogeneous basement membrane. But after birth in the progress of growth of the articular cartilages, it appears to be destroyed by pressure and attrition and probably from the retiring of the surface vessels towards the circumference. It appears to be progressively removed from the centre to the circumference of the cartilage, but always to remain a little in advance of the *circulus articuli vasculosus.*

Occasional Peculiarities in the Structure of the Articular Cartilages.—In

several instances, I have noticed in some of these cartilages what appeared to me to be numerous minute lacunæ, and I have now in my possession an articular cartilage (Plate I. Figs. 2 and 4) from the condyles of an os femoris exhibiting this structure. They exist in greatest abundance in the deeper part of the cartilage, gradually decrease in number, as the free surface is approached, and disappear entirely in the superficial fourth of the cartilage. They are lenticular in outline, invariably situated with their long diameter parallel to the surfaces of the cartilage, or at right angles to the filamentary intercellular substance, in which they are directly placed. The longest measure the $\frac{1}{1200}$th of an inch, the shortest the $\frac{1}{3125}$th of an inch; the short diameter is about the $\frac{1}{6250}$th of an inch. When well defined, beneath the microscope, they appear more translucent than the cartilaginous matrix in which they are situated, and when viewed a little within the focus of the instrument, they appear deep black, or oppose the transmission of all light.

Another peculiarity (Plate I. Figs. 5 and 6) which I have occasionally noticed, is the existence of fibres or columns of bone penetrating the structure of the cartilage,—I have in my possession an articular cartilage from the head of an os femoris presenting this character. These fibres are generally found pervading the cartilage near its surface of attachment, but are not the continuation of the bony structure upon which the cartilage is placed, for they are invariably arranged in a direction parallel to the surfaces. They are quite uniform in shape and structure, being compressed, cylindrical, in transverse section presenting an elliptical figure the long diameter of which is placed parallel to the surfaces of the cartilage or at right angles to the filaments of the matrix in which they are situated. They are not numerous, and vary from a size not exceeding a cell group of five cells to the size of four or five such groups. They are concentrically laminated, and also present a radiated conformation, resembling somewhat the structure of an Haversian ossicle, but neither present the canal nor the Purkinjean corpuscles.

Development and Growth of the Articular Cartilages.—The articular cartilages as a distinct structure are not perceptible so long as the epiphyses and articular extremities of the bones are not ossified, consequently they do not exist during fœtal life or for a considerable period after birth. At birth if an epiphysal extremity of a long bone be cut vertically through, it will be observed that the cartilage of the epiphyses extends to the synovial membrane and that there is not the slightest trace of a line of demarcation between the two varieties of cartilage. If the section be more carefully examined, a number of branching canals will be observed ramifying through the cartilage, many of which approach its articular surface but are in all cases separated from it by a thin lamina of the cartilage containing no canals. This thin lamina is the first appearance of the articular cartilage, but presents no distinction of structure at this period from the mass of cartilage of the epiphysis. The canals of the epiphysal cartilage contain blood-vessels, which,

according to Mr. Toynbee,* have a very peculiar disposition, consisting of arteries terminating in dilatations, or in convoluted branches, from which the veins arise. In the process of ossification and increase in size of the epiphysal cartilage, the developing articular cartilage appears to be pushed before it, resulting from an interstitial growth depending upon the division of the primary cartilage cells, the probable development of others, and the increase of the matrix or intercellular substance. When the articular surface cartilage (Plate II. Fig. 5) of a cartilaginous epiphysis is examined microscopically, it is found to have all the characters of the latter, and at an early period of fœtal life consists of a translucent, hyaline substance, in which are diffused with considerable uniformity, rounded or elliptical, isolated, nucleolo-nucleated cells, separated from one another by interspaces less than their own diameter. They vary to a moderate degree in size, and average about the $\frac{1}{1785}$th of an inch in diameter. The cell contents forms a mass rather darker than the intercellular matrix, the reverse of what is the case in the perfected articular cartilage. It is finely granular, with an intermixture of coarser and more defined granules, some of which appear to be oleic in character. The nucleus is round or oval, varies a little in diameter, averaging about the $\frac{1}{3370}$th of an inch, and is very finely granular in structure. Sometimes there are two nuclei, sometimes separated and distant, at others, approached, flattened upon the opposed sides, and apparently having originated from the division of a single nucleus. The nucleus contains a more consistent, translucent nucleolus, readily brought into view by the tincture of iodine, and measuring about the $\frac{1}{1111}$ th of an inch. The intercellular substance is comparatively soft, very translucent, and homogeneous. As the articular cartilage advances in its development, the intercellular matrix increases in quantity, separating the cells at greater distances apart, and acquires a firmer consistence. It becomes faintly granular, which after a time becomes more decided, though indistinct at any time without a good defining power, and finally takes on the peculiar filamentous arrangement described in a previous part of this memoir.

But the question arises how does this intercellular substance increase in quantity? Is it a direct deposit of imbibed matter from the liquor sanguinis in the vicinity of the cartilage, or is it produced through the agency of the cartilage corpuscles, or organic cells of the tissue? Recollecting that the liquor sanguinis does not contain dissolved cartilage, it cannot be a direct deposit; but may not the cartilaginous molecules already produced, convert an assimilative substance into molecules of a similar character, chemical and physical? The latter is probable, but it is easier to suppose it to be formed from imbibed albumen, through the agency of the cartilage cells, in the same manner that it originally results from the albumen ovi, probably through the agency of cells, the earliest cartilage cells, which have been the offspring retaining part of the organizing force of the Purkinjean vesicle. As it is

* Phil. Trans., 1841, p. 166.

certain that cartilage tissue is produced from albumen, it is worthy of inquiry whether the organic cells of the cartilage are capable of fixing a material thus transformed in their vicinity. If it can be demonstrated that such a power exists in organic cells in any part of the organic kingdom, we may feel assured that it prevails throughout. Turning back then, in vitality's great book, to the first few pages, we discover some very simple expositors of the question at issue. Thus, if we examine several of the families of Chlorospermeæ, the oscillatoriæ, ulvaceæ, nostochineæ, &c., we find numerous zooid plants, some of the simplest forms in the organic kingdom, consisting of single rows of organic cells, enveloped in a mucoid substance, and swimming in water or flourishing in humid situations. When the green spores, single organic cells filled with endochrome and containing a nucleus, are discharged from a parent cell, they accumulate and fix around themselves a mass of mucoid substance from the nutritive matter floating in the element around them. The spore develops a perfect plant, a mere filament or row, or a lamina of cells, continues to accumulate mucoid matter around it, until the latter is frequently several times the diameter of the plant itself. Retaining its organic activity it produces spores, which are to be discharged, and undergo the same progressive changes. Perceiving, then, that these cells can collect and fix matter around them, and continue to operate upon imbibed nutritive fluid, it is rendered probable that an analogous process may be carried on in the denser cartilage, since the latter, as is well known, is capable of imbibing nutritive fluid.

Whether the surrounding matter is formed within the cells and then exosmosed, or whether the cell life extends its formative power beyond the precincts of the cell wall, remains a question, but I think both are probable.

The cartilage cells at the early period of development are easily detached from the matrix, but at a later period the cell wall fuses or blends itself with the intercellular substance, but even after this the granular cell contents is easily detached in a single mass (Plate II. Fig. 4), appearing to be retained together by a delicate protoplasmatic envelop, corresponding to the primordial utricle of vegetable cells. Of the existence of such a structure in some animal cells I am well convinced, and hope to prove in a future memoir on the subject.

After the cartilage matrix has taken on itself the granulo-filamentous structure, the cartilage cells increase in number by division, and probably also by the origination of new cells. In studying the development of the groups of cells of the perfected articular cartilage, the steps of progress, as noticed at several periods during the growth of the latter, appear to be as follows:

The simple isolated cartilage cells are found to become somewhat elongated, (Plate II. Fig. 6,) then at the sides to present the appearance of an indentation. The nucleus has a central position, and then a faint dividing line, (Pl. II. Fig. 7,) more translucent than the other parts of the cell, is observed crossing the short diameter of the cell, resembling somewhat the transverse line of dehiscence of an ovisac. By varying the focus of the microscope, it is found that this

line penetrates as a plane through the cell. The next change (Plate II. Figs. 8 and 11) which is remarked, is the retiring of the granular cell contents from the inner parietes of the cell wall, excepting where in contact with the dividing line of the cell. The cell wall has now become blended with the intercellular substance, and the latter also occupies a position between the inner surface of the cell wall, with which it also blends, and the retiring cell contents. The cell contents, (Plate II. Fig. 9,) at this period distinctly presents itself divided into two masses, corresponding to the previously mentioned line passing through the cell, and each mass contracts itself with the contained half of the original nucleus, towards the centre of its respective cell.

From the uniformity with which the granular cell contents contracts, holding all its contained parts together, granules, nucleus, and fat globules, I am strongly impressed with the idea that it has a protoplasmatic envelop or primordial utricle. In vegetable cells we frequently observe the same mode of retiring of the granules of endochrome retained together by the delicate, transparent, mucoid envelop, the primordial utricle, and, as is well known, this may be produced by artificial means, which I find to be also the case with the cartilage cells, for I have observed the cell contents slightly and very gradually contract in a single mass upon the application of tincture of iodine, or even under the long-continued imbibition of water.

Whether the division of the nucleus precedes that of the cell, or the reverse, still remains a problem. Cartilage cells are not unfrequently observed containing a nucleus apparently in progress of division, and others, with a pair of nuclei near each other, and flattened upon the opposed sides, having the appearance as if the result of division of a primitive nucleus, without the slightest trace of any disposition of the cells to divide themselves. In other instances I have detected cells presenting a slight parietal indentation, without any similar appearance of the nucleus, and in all other cases, when the cell exhibited signs of division, a corresponding change was invariably observed in the nucleus.

The pair of cartilage cells which have originated from the primary cell, increase in size by the assimilation of nutritive matter, and undergo the same division as just described, until groups are formed as found existing in the perfected cartilage. The cell contents continually retire, but at the same time appear to partake in the general nutrition of the cell, until in the cell group we find the masses generally central, frequently irregular in outline, and containing more or less oil globules, and one or two nuclei, and in this state have been generally mistaken for the nuclei of the cartilage cells.

The cells, in their progressive division, do so generally in the same line, but also very frequently divide, laterally, so that the pair of cells resulting from the division of the first, may either form a row (Plate II. Figs. 12 and 13) of four or a group of four, (Plate II. Fig. 10,) and continue in this manner. The cause determining the arrangement of the cells into rows instead of

masses, has already been referred to; the least resistance to their extension being parallel with the filaments of the cartilage matrix.

The irregularity which exists in certain of the cell groups, especially in the stratum lying about one-fifth the thickness of the articular cartilage below its free surface, probably depends in some degree upon the pressure of the opposed cartilages of the joints. I do not mean by this that a sudden push would knock the deeper groups out of a vertical line, but I think during the progress of division of the cells and extension of the groups, a frequently repeated or moderately continued pressure exerted upon the free surface of the cartilage, would give them a tendency to incline to one or the other side, and hence their obliquity, or curved or irregular character from the ordinary line in a part of the cartilage most influenced by the pressure.

Of the Nutrition of the Articular Cartilages.—It has been already sufficiently proved (by the continual increase of the intercellular substance, and division and increase in size of the cartilage cells), that during its development and growth, the articular cartilage possesses an interstitial nutrition, but the question arises, after the cartilage is fully formed, is there a constant interstitial waste and repair of the cartilaginous element, as is the case in most organic tissues? M. Cruveilhier says, "les cartilages diarthrodiaux ne presentent aucune trace d'organisation,"* from which assertion it is evident that the existence of blood-vessels in a structure, is considered the necessity of organization, an error into which the older anatomists continually fell into. But we now are certain that these are only a provision for carrying a nutritive material within the sphere of action of those bodies which are the grand characteristic of organization, the organic cells, and that they are not necessary to organization, or even organic activity, but only to particular forms of it. It is the constant supply of a nutritive fluid which is essential to the active condition of the vital force residing in the organic cells, no matter whether the fluid be conveyed to them by channels (blood-vessels) excavated in the mass, or whether it be obtained by imbibition from the surface of the latter. Does not the stomach of a Hydra prepare a fluid as capable of digesting materials as that of man? and although the entire animal does not possess a single blood-vessel, who will say that this organ presents less the phenomena of organization than the corresponding one in man?

When an animal or plant is small, simple in structure, or possesses few and minute, or very simple organs, it is sufficient that the body or organs be bathed in a nutritive fluid, from the surfaces of which it may be imbibed, to present all the phenomena of vital action; but when the being becomes massive or complex, from numerous organs which are massive, blood-vessels become necessary, or rather channels which divide the masses into a surface of contact for the nutritious fluid, of greater or lesser extent, depending upon the

* Obs. sur les Cart. Diarth., *Arch. Gén. de Méd.*, vol. iv. p. 162.

degree of organic activity displayed by the organs, which is indicated by the amount of nutritive fluid they require.

If, then, we perceive an algous plant, or simply constructed animal, capable of obtaining nutritive matter from the water in which they are bathed, or the lichen from the rarer atmosphere in which it exists, without blood-vessels pervading their structure, is it not probable that in more complex animals we may have simple structures nourished in a similar manner? The articular cartilage appears to be such an one, without blood-vessels it is bathed by fluid exosmosing from the vessels beneath its attached surface, from the circulus vasculosus at its circumference, and especially by the synovia upon its free surface. I have said especially the synovia, an idea which may at first view appear preposterous, but which with a little consideration will appear at least quite probable.

We find all the conditions of a nutritive fluid due to the articular cartilage in the synovia, and it is particularly rich in albumen, the main element of nutrition of the cartilage.

From several experiments I find the articular cartilages are quite capable of imbibing the synovial fluid. Thus I collected the synovia from several joints of a calf in a vessel, and upon drying an articular cartilage, and then immersing it in the synovia, I found it gradually to imbibe the fluid, and resume its former appearance. Somewhat similar experiments I tried upon several living animals,—a rabbit and a pigeon. When a joint was opened, and the articular extremity of the bone protruded and allowed to dry, which it does pretty rapidly, upon reducing the dislocation, and examining it again after a little while, and cutting vertically through the articular cartilage, I found it had imbibed fluid from both surfaces, while a thin layer on the interior was still dry.

Another experiment showed me that imbibition takes place with considerable power in this tissue. I took four pieces of articular cartilage, each about one inch square, and two lines in thickness, permitted them to dry, by which they shrunk to a little more than one line in thickness, placed them in a vessel of water, and rested upon them a stage loaded with nearly ten pounds. The next day, upon removing the stage, I found the pieces had resumed their former bulk, thus having imbibed the water with a power sufficient to raise ten pounds nearly one line, and I have no doubt the power is much greater, but how much more so, it was not convenient at the time of my experiment to determine.

But, besides mere imbibition, we have all the conditions of that remarkable modification of the phenomenon, endosmosis, present in the articular cartilage, and even to its greatest intensity. Dutrochet proved long ago that albumen dissolved in water produces endosmosis with a degree of force not paralleled by any other organic substance, under ordinary circumstances.

The synovia presents a highly inspissated albuminous fluid separated by the articular cartilage from the much thinner liquor sanguinis of the vessels be-

neath. In such a condition, having proved the power of imbibition of synovia in the living animal, a constant endosmosing current must exist from without, and an exosmosing one from within.

Having introduced some saturated solution of ferrocyanide of potassium into the articulation of the knee of a living rabbit, a short time after it was indicated in the interior of the tibia by producing a precipitate with sulphate of iron. The same experiment I repeated upon a pigeon, and with like results.

During the passage of the currents of fluid through the articular cartilage, nutritive or organizable in character, if any activity still exists in the life seats, the phenomena of nutrition must be the result.

From the microscopic appearance of the cartilage, we observe that from various interstitial changes, the organic cells must retain at least a part of their wonted activity.

When we consider the amount of rubbing of one articular surface upon another in a movable joint, like that of the knee or hip, under the pressure of the superincumbent mass, from year to year, we cannot help thinking that the wear of the articular cartilages must be more considerable than is generally supposed, although we really perceive but the slightest degree of diminution after a lapse of many years, and even in advanced age, I have frequently noticed hardly any decrease in their thickness. The soft lips of the devotee in a few years will leave a deep impression upon a sacred marble, and I think a walk of some miles per day, through several years, will detach molecules enough from the surface of the articular cartilages, although they are kept constantly lubricated by a substance so well adapted to remove friction, to require a renewal of structure through the process of nutrition.

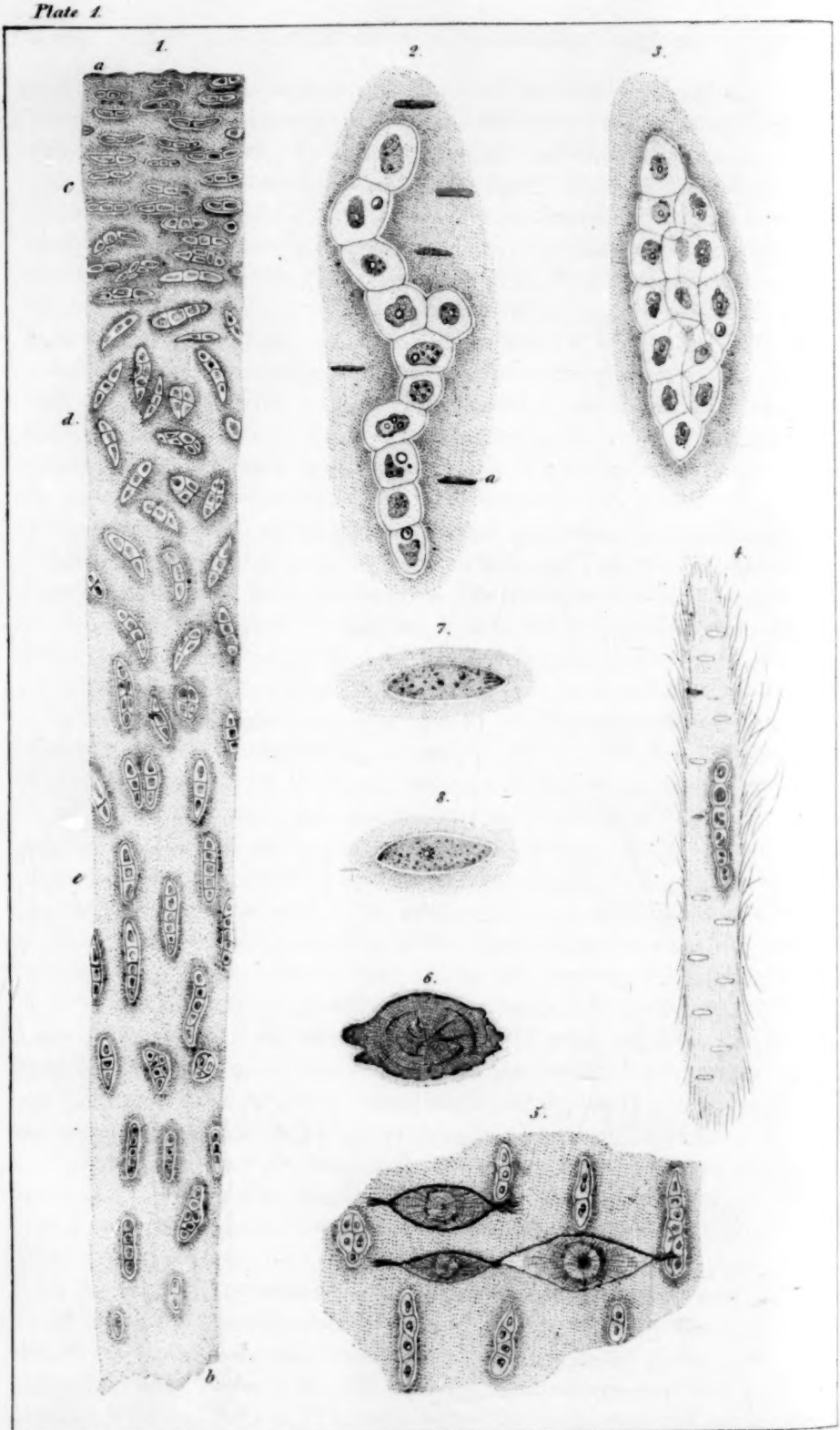
That such a repair is constantly going on is also rendered probable, by the condition of the more superficial stratum of the articular cartilage, in which are found cells presenting the appearance of having been later formed than those more deeply situated, and this becomes more strikingly the case as we approach the free surface of the cartilage. In the deep part of the cartilage the cell groups are large, the cells are apparently much diminished in organic power by frequent division, and the intercellular matrix is abundant, all betokening an earlier formation than the part lying more superficial to it, in which latter the cells are apparently in the progress of subdivision and formation of groups, and the matrix in comparatively small quantity, like in early cartilage. And then the occasional appearance of the development of new cells in the more superficial cartilage, will still favour the idea of an interstitial nutrition, which though slow, is sufficient to compensate for the wear of the cartilage.

Pathological Conditions of the Articular Cartilages.—As the articular cartilage contains no blood-vessels, so it is not liable to inflammation; but we frequently find cases in which there is an appearance of ulceration or corro-

sion of the surface of less or greater extent, or it may present numerous minute, disconnected fibres projecting from the surface of the bone, like the pile of velvet, or it may be entirely removed. All these changes may take place from either surface of the articular cartilage. The most prevailing opinion among pathologists of the present day is that these changes are the result of solution generally in purulent matter, and from the observations of Cruveilhier, it appears they are more rapid if the fluid acting upon the cartilage is in a state of putrescence. While the cartilage is bathed in pus, from the catalyso-disorganizing nature of the latter, it may be gradually corroded away from the surface, and from an exosmotic current of the seroid fluid of probably modified pus (scrofulous), filaments may be dissolved out and cell groups detached, or probably disorganized and dissolved out, leaving the remainder of the cartilage in the form of a layer of disconnected filaments, like the pile of velvet, as already alluded to. Should the pus or other catalyso-disorganizing fluid (modified synovia) become putrescent, then must the destruction of the cartilaginous structure be necessarily more rapid, not only from the same action being instituted in the molecules forming the surface of the cartilage, but from imbibition; it will also set up the same action interstitially, and will be aided by the death of the life centres, the cartilage cells, for putrescence is ever deleterious and destructive to cell life. Even the infusorial animalculæ and algous plants, which are generally believed to thrive most in water with putrescent organic matter, with the exception probably of Monads and Vibrios, are absolutely destroyed by it, and it is not until the putrid exhalations cease, that they become developed within the fluid. So long as a lamina of cartilage is left upon the surfaces of the bones of a joint, and the life of the cartilage cells be not destroyed, it is probable there may be the power existing of a very slow regeneration of lost substance, but if the cartilage be entirely removed, as the agents of its formation, the cells, are gone, there can be no restoration. If the bony surfaces be exposed, and pus or other catalyso-disorganizing fluid be present, the destruction of the bones is the result; if the formation of such fluid cease, and what has been formed is removed, and effusion of fibrin from the vessels of the osseous structure takes place from subsequent organization and deposit of osseous salts in the latter, we may have anchylosis, or irregular exostoses. If fibrinous matter be not effused, from the movement of one bony surface upon the other, the excited vessels of the osseous structure may deposit a lamina upon the rubbing surface as hard as dentine, and which from continued friction becomes highly polished.

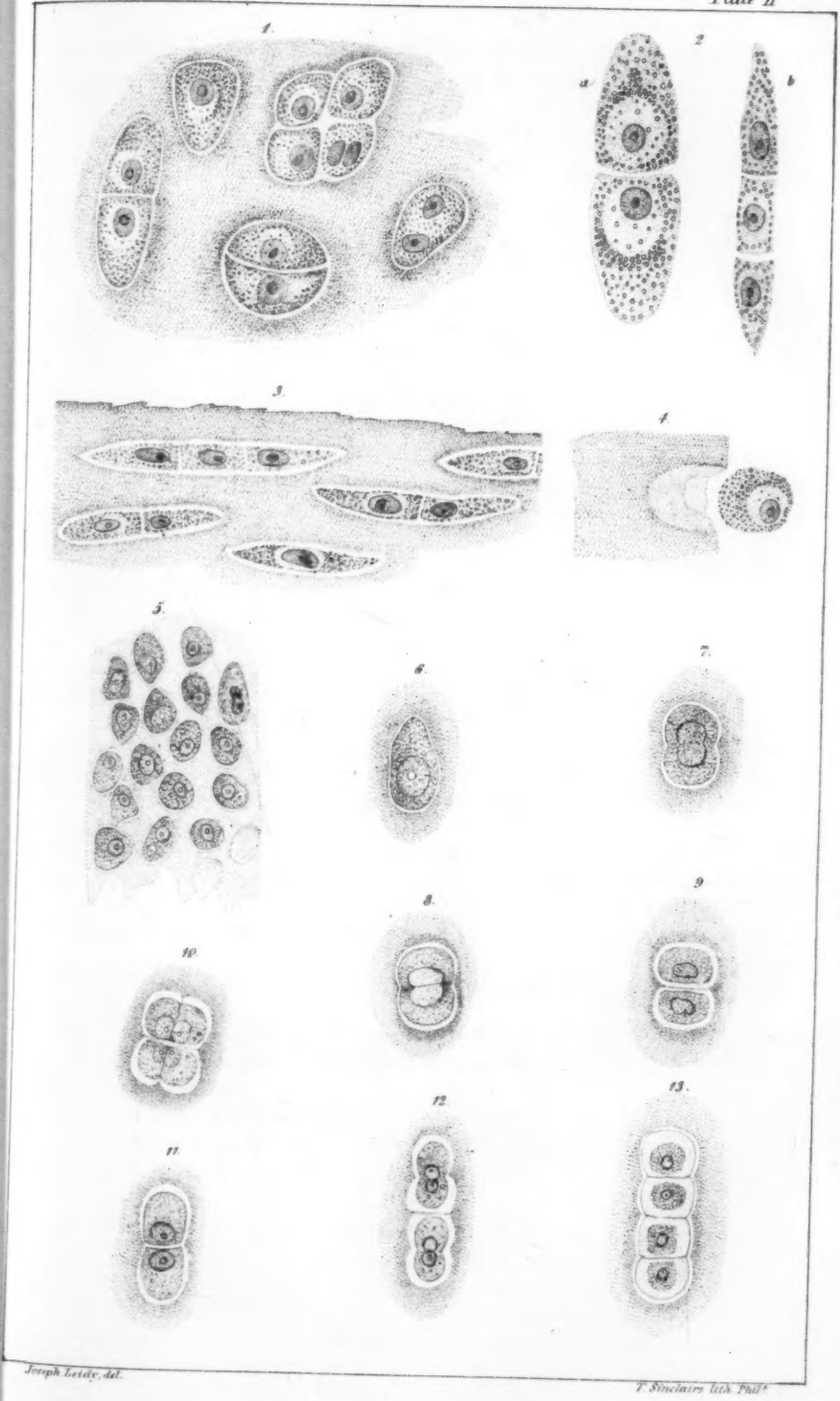
In the rupture of an articular cartilage it is said the fragments never unite, which fact was formerly frequently advanced in support of the non-organization of the tissue. Muscular substance, when destroyed by violence, is not restored; a lichen cut into two will not unite at the edges; nor will algous plants unite when divided. The nutrition of the parts continues, as is the case with the fragments of the articular cartilage, but as well almost might the

Plate 1.



Joseph Leidy del. *T. Sinclairs lith. Phil.*

Plate II



Joseph Leidy, del.

T. Sinclairs lith. Phila.

two opposed surfaces of articular cartilage unite in a joint in which there is little motion, as for the two broken edges of one to do so.

When granulations occur upon the surface of an articular cartilage, which is extremely rare, they arise probably from the effusion of fibrin from the circulus vasculosus of the joint, extending upon the surface of the cartilage and agglutinated to it.

REFERENCE TO THE FIGURES.—PLATE I.

Fig. 1 represents a vertical section of the articular cartilage of the head of the os humeri, highly magnified. *a*, free surface of the articular cartilage; *b*, surface of attachment; *c*, superficial stratum of cartilage in which the groups of cells are parallel with the free surface; *d*, stratum in which the course of the cell groups is irregular; *e*, deeper part of the cartilage, exhibiting the general vertical position of the cell groups, and the comparatively large quantity of intercellular substance.

Fig. 2. A cell group from the deeper part of the articular cartilage of the condyles of the os femoris, very highly magnified. It consists of a single row of cells, and does not present so straight a course as usual. In the interior of the cells may be observed the contracted mass of granular contents containing one or two small nuclei, and more or less fat globules. *a*, represents one of the lacunæ, which I have occasionally noticed in the matrix of articular cartilage.

Fig. 3. A group consisting of three rows of cells, from the deep part of the articular cartilage of the head of the os femoris, very highly magnified. In several of the cells, as well as in some of those of the preceding figure, some clear globules will be noticed which have the appearance as if they had escaped from the central granular mass.

Fig. 4 represents a shred of cartilage, torn from the deep part of an articular cartilage from the condyles of the os femoris, prepared as stated in the memoir, highly magnified, and exhibiting particularly the filamentary structure of the cartilage matrix. Some of the peculiar lacunæ are also represented, as this specimen contains them. A vertical group of cells is also figured.

Fig. 5. Vertical section from the deepest part of an articular cartilage of the head of the os femoris, highly magnified, and exhibiting several groups of cartilage cells, and also the transverse section of three of those peculiar fibres of bone, occasionally found pervading the cartilaginous structure, presenting the appearance of their interior structure.

Fig. 6 is a section of one of the bone fibres isolated, exhibiting very well its interior structure.

Fig. 7 represents a cartilage cell, highly magnified, taken from the more superficial part of the articular cartilage of the head of the tibia, and which, I think, is in an early stage of its development.

Fig. 8 represents a cartilage cell, from the same position as that of the preceding figure, and exhibiting an advance in development and the formation of a nucleus.

PLATE II.

Fig. 1. A section of the more superficial part of the articular cartilage of the head of the os humeri, parallel with the surface, very highly magnified and exhibiting the flattened cell groups, apparently of later formation than those more deeply situated.

Fig. 2. Two cell groups from the same position as figure 1; the right hand group, *a*, is viewed upon the surface parallel with that of the articular cartilage, and the other, *b*, is viewed upon the edge or side.

Fig. 3. A vertical section of the free surface cartilage, from the articular cartilage of the head of the os humeri, very highly magnified, and representing the cell groups viewed upon their edges.

Fig. 4 represents the escape of the mass of granular contents, held together by a protoplasmoid envelop, of a cartilage cell in which the wall has apparently become blended with the cartilage matrix, highly magnified, from the surface of the articular cartilage of the head of the os humeri.

Fig. 5. A fragment of surface cartilage from the epiphyso-cartilaginous condyles of the os femoris of a fœtus of six months, highly magnified, and exhibiting the uniform diffusion of the cartilage cells.

Figs. 6, 7, 8, 9, 10, 11, 12, 13, exhibit the progress of development of the cell groups of perfected articular cartilages from the primitive cartilage cells. 6 is from the same fœtus as that of figure 5. The others are from a fœtus at term, a body of six years of age, and an adult.

ART. II.—*Observations on Hydrophobia, with cases, in one of which chloroform was administered with a favourable result.* By SAMUEL JACKSON, M. D., Professor of the Institutes of Medicine in the University of Pennsylvania.—(Read before the College of Physicians of Philadelphia.)

THE number of cases of Rabies Canina, or Hydrophobia as usually named, that have occurred within the last year, have invested the disease with an increased interest and importance to the profession. From its unusual prevalence in the canine race, over a wide extent of country, it has presented, to a certain degree, the character of an epidemic in that class of animals. Accidents from the bites of rabid animals have been proportionally numerous, producing in the public, excitement, alarm, and a sense of insecurity from the domestication of the dog, whose almost human instincts have made him the companion, protector, and friend of man, one that never deserts him in the hour of peril, or abandons him in the time of need.

It must be acknowledged that we are much in the dark as respects the pathology and therapeutics of this most formidable disease. Our knowledge of its nature, seat, and mode of treatment, is not more settled than it was when first placed on record two thousand years ago. The uniformly fatal result that has, through all time, attended every perfectly authenticated case of communicated rabies canina, renders its curableness a matter to be questioned. Cases of reported cures are on record, but they all have some defect attaching to them, that vitiates their character. Dioscorides asserted that no one was ever cured of the disease, "Neminem sanatum fuisse;" and the same opinion has been reasserted by Liston, Moreau, Dessault, Peryrilhe, Le Roux, Blair, Hamilton, and others, who have seen and treated cases of this affection.

Our defective knowledge of this disease is in a great measure to be attributed to the limited opportunities for making it the subject of study and investigation. Numberless practitioners, in all periods, have passed a lifetime, without having met with a case of it; and of those who have encountered it, few have seen more than from one to three, or four cases at most, and those at long intervals. For the satisfactory understanding and correct explanation of any class of phenomena, a continued series of observation, experience, and experiment is indispensable; and this applies in a special manner to a disease at once complicated, obscure, and intractable, such as rabies canina, or communicated hydrophobia.

From the foregoing considerations, it has occurred to me, that the following cases of this formidable disease that have come under my observation, and were carefully recorded at the time, would not be thought obtrusive, or without some interest to the college.

The subject of the first case was a young man who kept a grocery store in Beach or Schuylkill Front Street, in the year 1834. A month or two previously to the attack, he observed in the middle of the day, a small dog to run into the store, and conceal itself between two barrels. In the evening, when about to close his shop, he recollected the circumstance, and intending to remove the animal, he thrust his hand between the barrels, seized it by the nape of the neck, and threw it into the street. In doing this, he received a slight bite on the hand. Nothing more was known of the dog, and there is no positive knowledge that he was rabid. So trifling was the wound, and so slight the impression made on the mind of the patient by the occurrence, that when first interrogated as to his having been bitten, when the symptoms excited some suspicions as to the character of the disease, he denied having suffered such an accident. No scar could be seen.

The following history of the case is extracted from my diary, in which I make a daily record of the cases that I attend. The dissection was made by Drs. Horner, Goddard, and myself, and the record of it is in Dr. Goddard's writing, taken down at the time.

Case of Hydrophobia.—*Monday, March 17th*, 1834.—David Lithgow, aged 30 years, sanguine temperament, light eyes and hair, fair complexion, large frame, well developed chest and limbs; last Monday exerted himself violently in jumping; got heated; perspired freely, as he usually does; felt sore after his exertions, particularly around the upper part of the abdomen; this painful sensation continued some days. On Saturday assisted in loading his canal boat, but did not exert himself more than in common; felt on Saturday uneasiness in the back of the neck and shoulders, with numbness of his arms, and great pain. Dr. Beattie, who was called in, saw him on Sunday about 10 A. M. The patient was in bed covered up with bed-clothes; the face then looked flushed, and the neck and chest of a red colour; but when the clothes were removed, the colour diminished. He was bled to ℥xx. Calomel and opium were given. While the Dr. was bleeding him, he drank water without difficulty.

Fig. 3. A vertical section of the free surface cartilage, from the articular cartilage of the head of the os humeri, very highly magnified, and representing the cell groups viewed upon their edges.

Fig. 4 represents the escape of the mass of granular contents, held together by a protoplasmoid envelop, of a cartilage cell in which the wall has apparently become blended with the cartilage matrix, highly magnified, from the surface of the articular cartilage of the head of the os humeri.

Fig. 5. A fragment of surface cartilage from the epiphyso-cartilaginous condyles of the os femoris of a fœtus of six months, highly magnified, and exhibiting the uniform diffusion of the cartilage cells.

Figs. 6, 7, 8, 9, 10, 11, 12, 13, exhibit the progress of development of the cell groups of perfected articular cartilages from the primitive cartilage cells. 6 is from the same fœtus as that of figure 5. The others are from a fœtus at term, a body of six years of age, and an adult.

ART. II.—*Observations on Hydrophobia, with cases, in one of which chloroform was administered with a favourable result.* By SAMUEL JACKSON, M. D., Professor of the Institutes of Medicine in the University of Pennsylvania.—(Read before the College of Physicians of Philadelphia.)

THE number of cases of Rabies Canina, or Hydrophobia as usually named, that have occurred within the last year, have invested the disease with an increased interest and importance to the profession. From its unusual prevalence in the canine race, over a wide extent of country, it has presented, to a certain degree, the character of an epidemic in that class of animals. Accidents from the bites of rabid animals have been proportionally numerous, producing in the public, excitement, alarm, and a sense of insecurity from the domestication of the dog, whose almost human instincts have made him the companion, protector, and friend of man, one that never deserts him in the hour of peril, or abandons him in the time of need.

It must be acknowledged that we are much in the dark as respects the pathology and therapeutics of this most formidable disease. Our knowledge of its nature, seat, and mode of treatment, is not more settled than it was when first placed on record two thousand years ago. The uniformly fatal result that has, through all time, attended every perfectly authenticated case of communicated rabies canina, renders its curableness a matter to be questioned. Cases of reported cures are on record, but they all have some defect attaching to them, that vitiates their character. Dioscorides asserted that no one was ever cured of the disease, "Neminem sanatum fuisse;" and the same opinion has been reasserted by Liston, Moreau, Dessault, Peryrilhe, Le Roux, Blair, Hamilton, and others, who have seen and treated cases of this affection.

Our defective knowledge of this disease is in a great measure to be attributed to the limited opportunities for making it the subject of study and investigation. Numberless practitioners, in all periods, have passed a lifetime, without having met with a case of it; and of those who have encountered it, few have seen more than from one to three, or four cases at most, and those at long intervals. For the satisfactory understanding and correct explanation of any class of phenomena, a continued series of observation, experience, and experiment is indispensable; and this applies in a special manner to a disease at once complicated, obscure, and intractable, such as rabies canina, or communicated hydrophobia.

From the foregoing considerations, it has occurred to me, that the following cases of this formidable disease that have come under my observation, and were carefully recorded at the time, would not be thought obtrusive, or without some interest to the college.

The subject of the first case was a young man who kept a grocery store in Beach or Schuylkill Front Street, in the year 1834. A month or two previously to the attack, he observed in the middle of the day, a small dog to run into the store, and conceal itself between two barrels. In the evening, when about to close his shop, he recollected the circumstance, and intending to remove the animal, he thrust his hand between the barrels, seized it by the nape of the neck, and threw it into the street. In doing this, he received a slight bite on the hand. Nothing more was known of the dog, and there is no positive knowledge that he was rabid. So trifling was the wound, and so slight the impression made on the mind of the patient by the occurrence, that when first interrogated as to his having been bitten, when the symptoms excited some suspicions as to the character of the disease, he denied having suffered such an accident. No scar could be seen.

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Soon after the Dr. left him, in attempting to swallow the medicine directed, he could not succeed from spasms in the throat. All attempts after this to swallow fluids or solids, increased the same effects. Dr. B. saw him again in the evening, when he exhibited violent convulsive spasms of muscles of respiration, whenever he attempted to swallow. Gave him sulph. morph. gr. iv, laudanum ℥ss, in an injection thrown high up into the bowels. Dr. B. requested me to see him to-day, (Monday, 17th.) Attended at 11 A. M. The patient was in bed, the perspiration flowing in streams from his face; pupils contracted; no unnatural heat of surface; tongue moist; very slightly furred; fauces of natural aspect; pulse 68, soft and round; bowels been opened frequently; eructates flatus; no nausea; no pain or uneasiness; has no disposition to spasms, unless excited by some cause. He attempted to swallow a piece of bread for me, but was almost suffocated in the effort. It was expelled from his mouth with violence. Water sucked up through a stomach tube caused violent spasms. The body was jerked upwards; he rose on his knees in bed, his face greatly distorted by the spasm. Opening the door, though he does not see it, causes him to cry out. The slightest motion of the air made by waving the hand, or a fan, causes convulsive sobs, as though cold water was sprinkled on his face. No other muscles but those of respiration are affected. Applied six moxas to the back of the neck, and injected far into the bowels gr. iij of sulph. morphia. 5 P. M. Symptoms more moderate; is heavy, inclined to doze; cups applied down the spine; afterwards, blister applied on the spine.

Tuesday, 18*th*.—Dr. Beattie remained with the patient all night; gave him in the night ℥j opium in injection, and early this morning ℈j more. Saw the patient at 9½ A. M. Symptoms greatly aggravated; was out of bed; manner agitated; nervous movement; profuse perspiration, which has continued from the commencement; pupils contracted; pulse smaller and feeble; skin wet and cold to feel; tongue moist, and nearly clean; is constantly hawking and expectorating a viscid phlegm; mind is changed since yesterday; was then calm, pleasant tempered, collected and cool; is now irritable, quick in temper, irregular in disposition; endeavours to control himself, but fails at times to do so; impatient, very desirous to drink; says in the intervals of the spasms he feels well, yet often suddenly takes a full, deep inspiration; appears to suffer, yet when asked to explain those feelings, becomes irritated; is highly excited by trifles. He was positive he could swallow bread soaked in water; a large piece was given to him. Made many ineffectual efforts to bring it to his mouth.

Face contorted, and whole frame thrown into strong muscular action in the effort, but failed to effect it. He then was given a very small piece. After a violent effort, he succeeded in getting it to his mouth; instantly he was seized with most violent spasms of the diaphragm. He had planted himself on his feet, in the attitude of a boxer, to make the effort. With great difficulty he brought his hand to his mouth, when instantly he was jerked backward several feet, and nearly fell. He was tossed about the room in various directions, until he fell on a low bed in violent strangling spasms. The paroxysm continued several minutes. The sound he makes, apparently a combination of coughing and hawking, might easily be compared to barking. An enema of camphor ℥j, in an emulsion, was administered. Saw him again at 12½; the spasms had continued to increase in frequency, and augment in force; they now come on without exciting cause. In one of great violence, which had continued some minutes, he had fallen on the bed insensible, and in four or five minutes after, breathed his last. I entered the room just at the

close of the paroxysm; the face was deep blue; the muscles in complete relaxation. He died evidently from asphyxia.

Autopsy of David Lithgow, ætat. 30, March 19th, 1834, 22 hours after death.—Body natural, muscles tense, became more so during the examination; joints rigid; skin sallow; face much changed in expression; some cadaverous settling of blood in the back; emphysema of neck, chest and right arm. No evidence of priapism.

Thorax opened.—Muscles of a very dark hue, becoming red from exposure to the air. Odour of ether strong and distinct, on cutting the pectoral muscles before the abdomen was opened; emphysema in anterior mediastinum. *Heart.*—Large coagulum in both ventricles; much of the blood, however, being fluid both in the heart and veins; blood black; not becoming red on exposure; substance of heart as firm as usual; lining membrane and valves healthy; lining membrane of aorta and vena cava healthy. *Lungs.*—Healthy externally; rows of globules of air in superficial veins; those of the lower part being fully distended with it. Parenchyma of lungs emphysematous throughout. Air-cells and bronchia healthy; rather dry.

Neck opened.—Palate and velum healthy; fauces and glottis covered with a thick tenacious mucus. A broad belt of a deep purple hue surrounded the pharynx, terminating below in a well-defined line on a level with the inferior edge of the cricoid cartilage; above, its termination was irregular, and merged into the colour of the rest of the pharynx. It was about an inch and a quarter wide. *Larynx.*—Lower part of epiglottis scarlet, deeper at the sides; mucous membrane of larynx deep red; mucous membrane of trachea and bronchia same as larynx; small quantity of mucus in trachea thick and puruloid. The trunk of the par vagum was examined, and found healthy.

Abdomen opened.—Stomach and intestines distended with gas; stomach contained about half a pint of thick fluid, somewhat resembling black vomit; mucous coat of stomach smooth; not softened. Above the cardiac orifice, patches of ecchymosis and stellated injection; latter in larger quantities along greater curvature; a large patch of it about centre of larger curvature, dotted injection interspersed; colour of injection brightened on exposure to the air. *Liver* healthy; gall-bladder filled with bile of natural colour and consistence. *Intestines.*—Mucous coat healthy; contained greenish feces of good consistence. *Bladder* healthy, and distended with urine.

Head opened.—Adhesion between dura mater and skull cap but slight; capillaries of dura mater injected; vascular trunks filled with air. *Pia mater* congested; large veins filled with air principally at the base of the brain; arteries of base entirely empty; arachnoid membrane somewhat dry. *Medulla oblongata* white, firm, and drier than natural; cineritious portion pale; large dots of blood in substance; on cutting it open longitudinally from behind, numerous transverse fissures filled with blood were seen. *Pons Varolii* white and firm; numerous red dots; cineritious portion paler than natural, but not so pale as that of the medulla oblongata. Cerebrum appeared healthy. The cineritious portion of the natural hue, and the medullary containing the usual number of red dots. Plexus choroides and vena galeni full of air. Thalami and corpora striata healthy; ʒjss of bloody serum in ventricles. Nervous trunks from base healthy.

Spine not examined. P. B. GODDARD.

The second case I witnessed daily during its progress, but did not attend: it was that of Cornelius Weeks, who died in the Pennsylvania Hospital this fall. A full account of this case was kept by Doctor Sargeant, together with

the post-mortem appearances. A statement of them has already been made to the College by Doctor Pepper.

I allude to it now for the purpose of pointing out the different modes of dying in this case, and that of Lithgow.

In the case of Cornelius Weeks, the nervous spasms were very violent the first forty-eight hours after his admission, but from the effects of chloroform internally as a potion, or from the natural course of the disease, they moderated very considerably. Throughout the duration of the case, the potion, two tablespoonsful of water or broths were taken, though with strong efforts, at regular intervals. He sank away gradually in a state of extreme exhaustion, presenting the general aspect and physiognomy of malignant fevers. He died apparently from the direct influence of the rabid virus on the blood and vital forces.

Lithgow, on the contrary, perished suddenly in the midst of a violent spasmodic paroxysm, causing asphyxia.

From the post-mortem appearances, I have always looked on his death as having been the result of the introduction of air into the blood-vessels, interrupting suddenly the circulation. This may have been accomplished by the spasm forcibly compressing the lungs distended with air, which could not escape from the firm closure of the glottis. Bichat, in his work "*Sur la vie et la mort*," relates experiments he performed that prove, it appears to me, the probability of this occurrence. It was this experiment of Bichat's that, at the time of the dissection, suggested the explanation I have given.

Bichat states that, if a stop-cock be adapted to the trachea of a dog, and a quantity of air somewhat greater than an ordinary inspiration, be pushed into the lungs with a syringe, and an artery be then opened in the leg or foot, there will escape frothy blood from the bubbles of air it contains; and if hydrogen be employed, and a lighted candle be held near, they will inflame, showing that the hydrogen unchanged had passed into the circulation.—pp. 354–55.

The third case is that of Mrs. Burrows, which has excited some curiosity and interest from the recovery of the patient. This very uncommon result is well calculated to cast a doubt on the true nature of the disease, and suggest suspicions whether it was a true case of rabies canina. On this account, I shall lay before the College a somewhat minute and detailed statement of all the circumstances of the case, and leave it with them to decide the question.

Mrs. Burrows is about 30 years of age, rather of full embonpoint, a brunette with black hair and dark eyes. She has a physically nervous temperament, but possesses a determined character, great resolution, and a flow of spirits that rarely fails. When a girl she was subject to nervous attacks and spasms. The last severe one, her father and herself inform me, occurred ten years since. She has been married seven years, and has had four children; one she lost last summer; the youngest was nine weeks old, at the period of her attack.

Since her marriage she has had but one nervous spasm, which took place

four years since. It was brought on by the painful attempts to remove a pin she had accidentally swallowed, and which was sticking in the fauces near the top of the larynx. This was the last nervous spasm she had suffered prior to the invasion of the disease. Doctor Horner saw her at the time, with her brother Doctor Cooper, at present surgeon in the U. S. Army.

In the month of July last, then residing in Cooper Street, Camden, she was at the gate door with her child, a little girl aged — years. She saw two dogs running up the street; she stepped into the yard alongside the house, leaving the child at the door. She soon after was alarmed by the cries of the child, and the noise of a dog, and running to the door found one of the dogs had attacked her child. She flew to its rescue, and in saving it, received a bite on the inside of the wrist of the right hand. Two punctured wounds were made by the fangs of the dog, about an inch apart. They were slight, and she did not mention the circumstance to her husband, or pay any attention to them; they healed in a day or two. The dog disappeared, and nothing more has been heard of him.

No inconvenience was experienced from the bites until the commencement of October, when the slight cicatrices made became red, slightly tumefied, and painful. In some days after, one festered, which she opened; it discharged a few drops of greenish matter, healed, and gave no further trouble. The other remained hard and painful, and pains extended from it up the arm, to the shoulder. In a few days the whole arm became painful and swollen, a small tumour formed on the inner side of the arm about two inches below the axilla. It did not gather.

During this period, as she occasionally complained of her arm, her friends would inquire of her what ailed it; to which she frequently replied jokingly, that she had heard of a milk-leg, and she supposed hers must be a milk-arm. This is mentioned to show that her mind was not occupied with the idea of the bites.

On Friday, 27th October, Mrs. Burrows, after coming down stairs in the morning, drank a glass of cold water, as is her custom. She was surprised by a sudden shuddering sensation, but as it passed off, she thought no more of it. In the course of the day she crossed over to the city to visit her parents. When on the river, particularly on her return, she felt a singular dread and uneasiness at the sight of the water she could not understand. It left her when she landed. In the evening, feeling unwell, she resolved to bathe her feet before going to bed. When the water was brought, she attempted to try with her hand its temperature. She was instantly seized with a violent shuddering, and sense of dread. Her husband, who was present, laughed at her, and asked whether she had not been bitten by a mad dog. She was fearful of giving him uneasiness, and did not mention the bite she had received in July. Soon after, in attempting to take a drink of water, she was seized with violent spasms of the throat, and a sense of suffocation to an alarming degree. Dr. Fisher, of Camden, who was her physician, was sent for, and remained with her the greater part of the night, as the spasms continued to recur at intervals. She was treated with acetat. morph. gr. ¼, every two hours. Dr. Cooper, of Camden, also saw her. I received a message, requesting my attendance, and visited her at 2 P. M. While in the parlour down stairs, I heard a peculiar sound that bore some resemblance to a dog's bark. It was remarked that the patient was then in a spasm, as in them she made that noise. When I reached the chamber, the spasm had ceased. Mrs. B. was in bed, in full possession of her senses, conversed with me without hesitation or difficulty in a pleasant manner. She had no fever; pulse 68 to 70; skin cool;

she complained of fullness of the head, which she attributed to the pills of acetat. morph. The adnata were slightly injected; she complained of pain in the neck, and in the throat; fauces appeared dry, and voice hoarse. Right arm swollen, and exceedingly sensitive; epigastrium sensitive to pressure, but it did not cause spasms, or disturb her breathing. Fanning, or waving the hand did not produce spasms, or unpleasant effects. Water poured from a vessel, though unseen, and no previous intimation given of the intention, Dr. Fisher informed me had caused paroxysms in the course of the morning. I requested her to drink some water, with which she complied immediately. She took a mouthful, but in trying to swallow, a frightful spasm was induced, limited, as it appeared to me, to the larynx and fauces; she appeared suffocating. The diaphragm and abdominal muscles did not participate in it, as I kept my hand on the abdomen to ascertain the fact. She appeared to me for a short time to be unconscious, the eyes rolled upwards, but she declared she retained her senses perfectly. It was a violent struggle for breath, but not general convulsion or spasms. There was no salivation or mucus collected in the mouth.

At this visit I expressed to my colleagues Drs. Fisher and Cooper, that although the symptoms were somewhat suspicious, yet taking everything into consideration, I was disposed to look on the affection as a simple nervous one, and probably hysterical.

The following course was agreed on. Sinapism to the epigastrium; cups on back of neck; sinapisms down the spine; enemata of assafœtida ʒiij suspended in water, and chloroform ʒjss in an emulsion every hour if required.

Sunday morning, October 29th.—Patient apparently better, very cheerful, calm, collected in manner, and gay in conversation. Spasms had continued yesterday until the evening, when they had ceased, and had not again returned; passed a quiet night, but did not sleep sound. She had drunk water freely several times. Some difficulty had been experienced in swallowing it, but no spasms were excited. Head more comfortable since the pills were omitted. Throat feels sore, but less painful than yesterday. Skin, pulse and tongue natural. Sensibility entirely lost in the skin of the right arm, below the deltoid muscle; does not feel pinching, or touching. She asked me to stick it with my knife, to ascertain whether she could feel that. There is notwithstanding, deep-seated pain in the course of the nerves. There are also slight spasmodic twitchings of the muscles of the arm. The whole abdomen feels sore and uncomfortable; pressing the epigastrium gave most uncomfortable sensations, and disturbed the respiration, rendering it irregular, but did not cause spasm. In the night ejected some blood by vomiting; did not coagulate. Bowels have not been opened.

At this visit my first impressions were rather confirmed than weakened. It was determined to continue the same plan of treatment, and to add the following, with a view of acting on the bowels: ℞.—Mass. hydrarg., ℈j; syr. rhei, ʒj. A teaspoonful every hour. Enema of emulsion of assafœtida, if spasms continued.

The first dose was given at 12 M. The attempt to swallow it brought on violent spasms of larynx and chest, threatening suffocation.

From this time, the spasms occurred with short intermissions, spontaneously, notwithstanding the assafœtida injections; sinapisms to abdomen, and other means resorted to by Drs. Fisher and Cooper.

I saw her at 5 P. M. There was an intermission when I entered the room. She expressed herself as suffering great bodily distress. The right arm was in constant agitation from slight spasms; the right shoulder painful; no sen-

sibility in the forearm. The cicatrix was tumid, red, and sensitive to pressure, though the hand and arm were insensible. She complained of acute pain in both hams. Pressing on the groins, on the calves of the legs, in the armpits, as well as under the knees, excited acute pain. Has sense of distress in throat, chest, heart, and abdomen. Notwithstanding this state of suffering, talks cheerfully, even answered in the same spirit to some jocose observations, and expressed her full confidence in her attendant's skill. Without her observing it, I placed my hand near the back of the head, some inches from it, and gently waved it. She was on the instant seized with shuddering, followed by strangling spasms of the larynx, fauces and of the chest, arresting respiration, followed immediately by spasms of the trunk, in which she was tossed about the bed, gnashing her teeth, and plunging her head into the pillows, and bed-clothes, biting and tearing them.

Chloroform was sent for. It was obtained from an apothecary in the neighbourhood. When procured, as no sponge was at hand, I soaked a rag with it, and seizing her by the back of the neck, attempted to hold it near her mouth. The inhalation was imperfect; as the spasms kept the patient in constant motion, and she was making plunging efforts to seize the rag with her teeth, some caution was required to avoid being bitten.

A sponge was then procured, and the inhalation was more effectually performed; as the effect took place, and the spasms were mitigated, the patient assisted herself to hold the sponge to her mouth. In a few minutes the full effect was produced, and she fell perfectly insensible, every muscle in perfect relaxation, and the respiration easy and natural. An enema was now administered, consisting of Pulv. ipecac. composit. ℈ij; chloroform ℥ij, in starch water.

The medical attendants retired to another room, where the excision of the cicatrix was talked over and determined on.

After returning to the room, while sitting by the bed-side, she suddenly addressed me, saying, "Dr. Jackson, what is my disease?"—"Nervous spasms," I answered.—"I know that, but what causes these spasms?"—"Many causes of various nature may give rise to them."—"That is true, but is not that the cause," putting her left forefinger on the cicatrix on the right wrist, "Is it not that?"—"Most probably it is."—"Why not, then, cut it out? why not, if necessary, take off my arm? I can bear it, I have nerve for anything."—"Cutting it out is precisely what we have concluded, just now, to do, but it so happens, we have no instrument with us."—"Well, take your penknife, I won't flinch." Dr. Cooper, who had stepped out, returned with a venerable scalpel that had evidently not been in service for a long time, and a tenaculum. I hooked up the cicatrix, and with some effort succeeded in excising the skin surrounding the cicatrix. This rude surgery was borne well. She then said, "Do you not think it would be better to apply caustic to the cut?"—"A good suggestion," I replied, and immediately applied caustic liberally over the whole surface. A poultice of pulv. ulm. rubr. was directed to be applied.

The excision of the cicatrix was hardly completed, when a spasm came on. The chloroform was immediately administered with the sponge, its full effects were induced, and she again became insensible. She was some time in this state; as she was recovering from it, she raised herself slowly on her knees, and with her eyes intently gazing, and her arm stretched upwards, she addressed the vision of her lately lost child. When she had entirely recovered, she related the vision she had seen.

It was agreed that the chloroform should be given as soon as a paroxysm

was observed coming on, that in the course of the night another enema similar to the last should be administered, if the spasms continued to recur, and calomel gr. xx should be given to relieve the bowels.

Monday, October 30th.—At my visit this morning found her better, calm, and cheerful; pulse 96; temperature of skin natural. Tongue moist, slightly coated. I was informed that spasms had continued to recur from the time I left her until midnight. Many were exceedingly violent. The chloroform had been timidly administered. As the spasms appeared to yield, the chloroform was withdrawn, from an apprehension of some ill consequences from using it so constantly. The patient, as soon as the spasms would permit her to articulate, would call for more and urge its use. After 12 o'clock, the spasms were subdued so much, that instead of being instantaneous, she had a warning of their approach, when a few inhalations arrested their further development.

Was sick in the night, and vomited more blood, which remained liquid.

Throat feels sore, voice is hoarse; abdomen uncomfortable, and slight pressure distressing; cannot bear the weight of the bed-clothes on it. Pressure on the calves, under the knees, groins, and arms, very painful. Bowels have not been moved. In the confusion from the conflict with the spasms, the calomel directed had not been given. No feeling in right arm. It is paralyzed, but is often affected with tremulous spasms.

Mrs. B—— is naturally near-sighted. Her father assured me she had been so from early youth. She was unable to distinguish the features of a person standing at the foot of the bed. Her sight is now quite acute. The shutters are bowed, and the curtains drawn, as the light is offensive, yet she sees a pin sticking in the paper on the opposite wall of the chamber, distant at least twelve feet.

The hearing is equally acute, though her hearing is rather dull in health. Yesterday when the medical attendants were in the parlour beneath the chamber, the stairway opening into a small entry communicating with the bed-room, she heard the conversation below, and repeated parts of it to those with her at the time.

She remarked to me that her throat felt so uncomfortable and dry, that she wished it could be greased inside with a feather. I suggested to her to take some oil of butter, to which she assented. It was prepared and brought to her in a silver spoon; but as soon as the glitter of the metal caught her eye, she was taken with a strong shuddering, and spasmodic action of the throat and face. The oil was then placed in a small toy-cup; she received it in the mouth without difficulty, but in attempting to swallow it, a spasm came on. I called to her to spit it out; but she made another effort, when most of it was expelled, and a strong spasm was induced. The chloroform on a sponge was brought under her mouth, a few inhalations produced partial insensibility and relaxation, and the paroxysm ceased.

Calomel (gr. xvi) was given. Pills are swallowed without difficulty, and crackers can be chewed and swallowed.

6 P. M. No complete paroxysm since morning; several times spasms were threatened, but arrested immediately by chloroform inhaled. This afternoon, her father seeing a fly about to light on her face, waved his hand to drive it away. This excited a spasm, checked, however, by chloroform. The looking-glass, and other shining objects in the room, were covered over. The glitter distressed her. The windows were also kept down; she could not bear the air to blow upon her.

I inquired of her what had been, and were, her feelings; she said it was

difficult to describe them, but they were more like a dread of something, she knew not what, than any other feeling. Her mind is tranquil; she converses cheerfully; being a Catholic, she has observed the religious obligations of her faith, and is fully prepared for any event.

The wound is discharging freely a thin serous fluid. The arm feels, she says, as though sensation was returning in it.

Bowels have not been opened, or urine passed. Directed a purgative enema, and after evacuations, pulv. ipecac. comp. ʒss, in injection. Chloroform *pro re natâ*.

Tuesday, 31*st*.—Had passed a comfortable night; bowels and bladder had both been relieved last evening, and again this morning. Had taken the Dover's powder injection. Twice spasms had been excited in the evening; once by a young girl coming into the room, and approaching the bed with a glass of water in her hand; the other, by an attendant, without thinking of it, bringing a basin of water into the room; each time chloroform arrested the spasms.

The wound discharges freely; suppuration has commenced; sensibility has returned to the arm; pressure on the calves, beneath the knees, in the groins, and armpits, much less painful.

She took last evening, some ice-cream, and repeated it this morning; she has taken also some milk this morning. The uneasiness of the throat greatly abated; epigastrium less sensitive; bears pressure without the same distress. She informed me this morning, that during the violence of the attacks, a feeling appeared to start from the cicatrix, ascend the arm, pass down the chest, and strike into the stomach; but that now the feeling appears reversed, and seems to pass from the stomach into the arm, and descends into the wound.

The chloroform is used whenever there are threats of spasms from uneasy sensations. Repeat the enema of Dover's powder.

I inquired of her whether there was any difference between the attacks she had suffered from the last few days, and those I had understood she was formerly subject to. She said there was; they were wholly dissimilar. I asked in what respect. There is this difference, she remarked; in the former attacks I was generally unconscious; I knew no one about me, what was said, or what was doing. When I came to myself, I did not know that anything had happened to me. In these last, I had my consciousness entire. I knew every one, heard all that was said, and I knew all that was doing. There is also this difference. In my old attacks, bandages were tied tight around my stomach, and pressure made, which always gave me relief in the milder attacks; in these last, I could not bear the slightest pressure on the stomach; the bed-clothes oppressed me.

Nov. 1*st*.—Was restless in the night. The hand wound and arm more painful; the edges of the wound pale and unhealthy; discharge thin and sanious. Directed it to be dressed with ungt. resinæ flav. Abdomen and epigastrium are no longer sensitive, and seat of uncomfortable sensations; bowels relieved. This morning has taken ice-cream and milk. She has swallowed three or four raw oysters; complains of thirst, and wishes to make a trial of drinking water. Some was brought to her, and she took a large draught. A slight tremor only was produced, followed by a sense of glow, and suffusion of the face; continue milk, ice-cream, and raw oysters. At night the usual enema of Dover's powder. Chloroform has been discontinued.

4*th*.—Has continued free from spasms; arm been painful. To-day was brought in a carriage from Camden, to her father's residence in Market Street above Ninth. Saw her after her arrival. She was in sitting-room down stairs,

resting herself. At 9 P. M. I was sent for to see her. In carrying her up stairs to her chamber, she had fainted. She continued from fifteen to twenty minutes in that state. She revived soon after I entered the room, when, as usual, she commenced with me a cheerful conversation.

She informed me that she had lost her milk during her illness, and will be compelled to get a nurse.

5*th*.—Had rested well; feels better though feeble; arm less painful.

23*d*.—Have not seen Mrs. Burrows until this evening, at 10 P. M., when her brother Doctor Cooper, of the U. S. Army, urged me to visit her immediately.

Since last report her general health has been good. The arm has remained painful; the pain appears to be confined to the ulnar nerve in the forearm, but the whole shoulder is painful. On the 17th, Doctor Fisher saw her, and as she was that day feeling very uncomfortable, with increased pain of the arm, and the wound was nearly healed, he again applied caustic potash. The slough was thrown off to-day. The pain of the arm had been increasing for the last two days, and finally, this evening, strong spasms of the arm came on, recurring in paroxysms every ten to twelve minutes, accompanied with sense of numbness. Severe pain existed also in the nape of the neck, extending down the back to the last dorsal vertebra.

I directed a warm poultice with ten grains of powdered opium to be applied to the wound. A pill containing sulph. morph. gr. ¼, was ordered to be given every two hours, and a dozen dry cups to be applied along the spine in the neck and back. One spot opposite the third dorsal vertebra was exceedingly sensitive; when a cup was applied to it the right arm was thrown into violent spasms, the forearm was rigidly flexed, and the hand clenched. It continued in this state until the cup was removed.

24*th*.—The pain and spasms of the arm continued nearly all night. Towards morning became less, and the patient got some sleep.

No spasms of the arm to-day; the course of the nerve is yet tender; a little below the axilla is very sensitive; wound discharging freely; a liniment of extr. of stramonium, aconite, opium, with cerate and oil, was directed to be rubbed on the arm, and the pill to be continued at intervals of four to six hours.

25*th*.—Rested well last night; arm less sensitive; wound looks healthy; omit the pills; continue the liniment.

From this period Mrs. Burrows continued to improve in health. Her milk returned. The wound cicatrized in the second week of December, the pain ceased in the forearm, but the shoulder and axilla continued sensitive, and occasionally painful, into the commencement of January. To the present time she continues to enjoy the most perfect health.

In the three cases of Lithgow, Weeks, and Mrs. Burrows, the symptoms of hydrophobia were strongly manifested. Weeks' case was undoubted rabies canina. I draw a distinction between them. Hydrophobia is a nervous affection, more frequently a nervous symptom, complicating or accompanying other diseases. It may be regarded as nearly pathognomonic of rabies from its almost uniform attendance in a greater or less degree on it, and hence is often confounded with it. Hydrophobia may exist, though rarely, as a simple nervous disease; it most commonly is manifested as an hysterical symptom, when it does not belong to rabies.

Lithgow died from hydrophobic spasms, by which asphyxia was induced.

Weeks did not die in spasms, or from proper hydrophobic disorder, but in a state of complete adynamia and ataxia, produced by rabific poisoning. In most of the fatal cases of reported rabies, death appears to have ensued from asphyxia brought on by spasms of the respiratory apparatus. Doctor Marshall Hall has lately stated that death always in hydrophobia occurs in this way. Dr. Physick appears to have entertained the same opinion, as he recommended tracheotomy to be always performed; and the same advice has been reiterated by European practitioners.

In the case reported by Doctor E. Hartshorne, (*American Journ. Med. Sci.*, Oct. 1848, p. 339,) the hydrophobic spasms ceased before death, and the patient was able to swallow liquids. In that case as in Weeks', death resulted from the deadly influence of some virus infecting the blood, and destroying its vital capabilities.

In Lithgow the hydrophobic spasms were more violent than in Weeks; and in Mrs. Burrows they were equally strong and distressing, until checked by the chloroform inhalation.

Mrs. Burrows' case I regard as one of hydrophobia; was it rabies? That cannot be asserted in the absence of all information respecting the rabidness of the dog by which she was bitten. That it was not hysteria, I feel equally confident. I have had to manage numerous cases of that affection in private and public practice, but never have I met with a case in which so few genuine hysterical symptoms were present, or exhibited any approach to the train of phenomena that were present in Mrs. Burrows. That the hydrophobic symptoms had their origin in the cicatrix of the bite, I cannot doubt. There was a degree of painful irritation there, more than sufficient to account for the whole train of nervous disorder and symptoms she suffered.

I have seen two fatal cases of tetanus produced by irritating causes incomparably less active. One was an apprentice of Mr. William Fry. He had received a slight scratch in his thigh from the jagged end of a board. Doctor Horner and myself examined the body. The wound had been healed some time. We made a most careful search for some foreign body in the skin, and when about to abandon it, accidentally, I perceived a slight hardness in the fascia lata, which was to all appearances perfectly healthy. On splitting it open, there was found a small splinter about one-eighth of an inch in length, and a line in breadth. There was no inflammation, the lad had suffered no pain, no local sign of any injury or disturbance was to be detected; yet that injury and the presence of that trifling foreign body, had been sufficient to cause a fatal disease of the nervous system.

In the other case, a small piece of leather from the shoe, had been forced beneath the nail of the great toe, by a projecting nail, against which it had been struck. No inflammation, or swelling, or suppuration of the toe had taken place, but death ensued from tetanic spasms.

The excision of the cicatrix in Mrs. Burrows' case, and the establishment of a free discharge and suppuration, it is most probable contributed, by removing the exciting cause of the spasms, to the recovery of the patient.

The inhalation of the chloroform unquestionably produced the most beneficial effects in arresting the spasms, and preventing their development. But it cannot be relied on as a curative agent in true hydrophobia or rabies canina. It is an important aid by holding the paroxysms in check, and may prevent death from their violence, or their long duration.

In the above three cases, the most striking phenomena, was the exalted and perverted action of the excito-motory function of the medulla-oblongata (hyperdynamia and ataxia) connected with respiration and deglutition. In all the well-reported cases of rabies canina and communicated hydrophobia, the same phenomena have prevailed. Impressions and excitement communicated to it through the eye, as shining, or glittering, or strong light; through the ear, as sounds of water, sometimes of wind; from the face, as movement of air over it; from the mouth and fauces, as the touch of water and sometimes of solids, or the efforts to swallow them, throw the respiratory apparatus and the muscles of the throat, into disordered, irregular, convulsive, or spasmodic action. This often is so violent as to produce death from asphyxia.

In all cases of rabies the medulla oblongata, the exciting and governing central nervous organ of the involuntary and automatic muscular actions, is in the above pathological state, but varying as to its degree in different individuals, during the first and second stages of the disease. Should the patient survive the two first stages, and pass into the third, a new train of phenomena is then established. With the ataxia of the early periods is combined adynamia, from the breaking down and exhaustion of nerve force; muscular power rapidly fails, and the vital functions depending on muscular action and physical laws, for their maintenance, as respiration and circulation, speedily are extinguished.

Before concluding this communication, already longer than I had intended, there is one remark I wish to make. A case of hydrophobia produces much excitement and interest. The patient is most generally surrounded by curious visitors, professional as well as others. From the excited and perverted state of the nervous functions, the effect is injurious. Spasms are brought on, and aggravated by the impressions made on the senses, and by the annoyances he experiences. I was much struck with it in Lithgow's case. From morning to night his room was crowded by people of the neighbourhood, and professional gentlemen calling to witness a case of so rare an occurrence. Weeks was much distressed and annoyed by the numbers of the gentlemen of the profession that at first crowded into his room, but subsequently this was corrected. He remained alone, or with a single attendant, until the time for administering his remedies, or the period for visiting him by the medical prescribers. I asked him whether he had spasms when entirely alone; he told me he had not.

None were permitted to see Mrs. Burrows but members of her family who were her nurses, and her medical attendants. I am convinced that a patient has a better chance of recovery, certainly has much fewer attacks of spasms, and far less suffering, when kept in as quiet a state as possible.

ART. III.—*History of Five Cases of Pseudo-membranous Laryngitis or True Croup; in three of which the Operation of Tracheotomy was performed, and in two successfully; with Remarks on the Treatment, and on the Operation.* By J. FORSYTH MEIGS, M. D., Lecturer on the Diseases of Children in the Philadelphia Medical Association, etc. etc.

IN a paper published in the number of this Journal for April 1847, I detailed the history of seven cases of pseudo-membranous laryngitis, all of which, except one, had occurred in the year 1845. The remaining case occurred in 1846. Since the date of that paper, I have not met with a single instance of either pseudo-membranous angina or laryngitis, until in June 1848, when I was called to see the first case about to be reported. From that time to the end of the year, I met with the four other cases to be detailed, and saw also three cases of slight pseudo-membranous angina in children, in whom the exudation did not extend beyond the tonsils. During the same period of time, I have heard of six fatal cases of true croup, occurring in the practice of my medical friends in the city, whilst in 1847, I neither saw nor heard of a single case, and in 1846 of but one, which circumstances seem to show, it appears to me, that the disease prevailed epidemically in our city in 1845, then nearly ceased in 1846 and 1847, and appeared again as an epidemic in 1848.

I propose, on the present occasion, to furnish in some detail a history of the five cases referred to above. Three of these were instances of the malignant form of angina, to which, in former times, the titles of gangrene of the throat, sore-throat distemper, putrid sore-throat, and angina suffocativa, were given. In the two other cases the attack commenced in the larynx, and though there was some plastic exudation in the fauces in one, it was not sufficient to exert any very serious influence on the character of the disease. In the remaining case, there was no appearance whatever of deposit in the throat.

In three of the five cases, the operation of tracheotomy was performed. Two of these were successful, and inasmuch as they are amongst the first, and, indeed, so far as I know, the first successful operations of the kind in this city, I shall not hesitate to detail their history with considerable minuteness, in the hope of calling the attention of the profession in this country, to the possibility of rescuing patients from an apparently hopeless condition of illness in this dreadful malady, by a resort to the operation;—an operation which, in my humble opinion, has been, considering the unquestionable evidence of its not unfrequent success adduced by European continental surgeons, too much neglected, and even proscribed by physicians in this country.

CASE I.—*Pseudo-Membranous Croup, unaccompanied by exudation in the fauces—Tracheotomy—Recovery.*—The subject of this case was a hearty-looking boy, nearly five years old, who had had, however, severe attacks of fever from indigestion and simple angina, accompanied on several occasions by convulsions.

I was called in to see him at 7½ P. M. of June 3d, 1848. The history of the case prior to my visit is as follows. Three weeks ago he was seized with a dry, hard, and noisy cough, not very frequent at first, and unaccompanied by fever or other signs of sickness. After lasting a week it became more frequent and hoarse. Ten days since a homœopath was sent for to take charge of the child, the symptoms having increased. He attended for a few days, and then associated with himself a brother homœopath, to hold consultations upon infinitesimals. During these ten days the cough became very hoarse, croupal, and gradually smothered, until when I saw him, it was nearly extinguished. The voice at the same time grew hoarse, weak, and at last whispering. The child was attacked with stridulous respiration, and severe dyspnœa, the latter being, according to the mother's account, most distressing for three nights before my visit.

During this time the treatment was infinitesimal; no emetic, or calomel, or bath, or blood-letting; nothing, except that the mother had, on her own responsibility, given enough hive syrup the night before my visit to cause vomiting.

At my visit I found the child labouring under the most dreadful orthopnœa. Each movement of respiration was attended with violent muscular effort, and with loud stridulous sound. The expiration was long, laborious, and difficult, and seemed to require as great an effort of the respiratory muscles for its accomplishment, and to occasion as loud a stridor, as did the inspiration. There were frequent attempts at coughing, which resulted merely in a momentarily increased loudness and shrillness of the stridor, and a faint explosion of sound at the termination of the expiration, instead of the full ordinary sound of coughing. The cough was in fact smothered. The dyspnœa was incessant—nothing relieved it for a moment,—neither change of position, nor cough, nor sleep, nor quiet, suspended for a moment the incessant struggles of the child for breath. The voice was a mere whisper. The expression was extremely distressed and anxious, the face as yet somewhat flushed, and the hands not devoid of colour. The boy was constantly changing his position. After lying quietly for a few moments on his side, with his head thrown far backwards, he would wake, toss and turn in the bed, and then doze again, or insist upon being taken upon the lap, where he would lie but a few minutes before desiring to be placed again upon the bed, or begging to be carried in the arms about the room.

The fauces presented not a trace of false membrane, but were red and slightly tumefied. The parents assured me that there had been no sore throat whatever.

I ordered a few leeches to be applied to the front of the larynx, directed five grains of calomel to be given every hour, and the fauces to be touched with a solution of ten grains of nitrate of silver to an ounce of water.

At 9 P. M. my father, Dr. C. D. Meigs, saw the patient with me, when it was agreed to give an emetic of powdered alum immediately, and to resume the calomel after its operation.

Accordingly half an ounce of alum was given in divided doses mixed with honey, which produced effectual vomiting, repeated occasionally for a couple of hours afterwards. Nothing was rejected, however, except the remedy mixed with serous and mucous fluids, and no relief followed. I remained with the child through the night, and gave him forty-five grains of calomel, but without any good effect.

June 4th, 9 A. M.—Condition aggravated; orthopnœa dreadful. The child is either dozing or exceedingly restless. Face pale, white; hands pale; nails

bluish. It was evident that he must soon die unless relieved, and we accordingly proposed to the parents the operation of tracheotomy. They, after hearing a candid statement of the nature of the case, gave a ready consent, and accordingly at 11 A. M., Dr. Pancoast, Professor of Anatomy in the Jefferson Medical College, performed the operation at our request.

11 A. M. *Condition just before the Operation.*—The patient is perfectly conscious, and yet careless and unconcerned; doubtless from the partial asphyxia under which he is labouring. Orthopnœa as before described; stridulous sound very loud; expiration extremely laborious. Voice a mere whisper; face pale; lips pale and bluish; gums almost without colour; tongue pale in tint, not red or pink as in health, and with a duly oxygenated blood. The whole tegumentary surface is pale; and the hands bluish. These changes evidently indicate a degree of asphyxia which must soon have proved fatal. On careful auscultation, I could distinguish no vesicular murmur over any part of the dorsum of the chest. Nothing but the transmitted stridulous sound could be perceived.

Description of the Operation—as communicated to my father by Dr. Pancoast. "My dear Sir:—I send in accordance with your request, a brief account of the operation of tracheotomy, which I was suddenly called by you and Dr. J. Forsyth Meigs to perform on the 4th inst. We found the little patient in such imminent danger of suffocation, and the parents so urgent for the employment of any promising means of relief, that we were enabled at once to proceed with the operation as follows:

"The child was laid on a table garnished with a folded blanket and pillow, with his head facing the window, and sustained by yourself, your son, the father of the boy, and my student, Mr. Horner. I first divided the integuments and fascia, exactly in the median line, from the lower part of the cricoid cartilage, to the top of the sternum. The inner edges of the sterno-hyoid muscle were thus exposed. Those muscles were separated, with some of the tissue below them, with the handle of the knife, and with a few touches of the edge, especially at the lower part of the wound, after it had been ascertained with the finger that there was no middle thyroid artery sent up from the innominata.

"A large vein was found at the bottom of the wound, crossing obliquely to the right side, which I tied and pushed aside. The isthmus of the thyroid gland was now exposed. No pulsating vessel being felt in this part, I divided it, with the intention of taking up the cut vessels on either side with the tenaculum, separately or in mass, in case there was bleeding, which did not, however, follow. The trachea, covered with its cellular sheath, was now freely exposed for about an inch and a half. This sheath I next split up longitudinally and cross-cut near the larynx, so that I could push it readily aside and leave the trachea well exposed, without risk of the sheath forming a nidus for the lodgment of blood or mucus, and presenting a physical obstruction at the opening to be made in the trachea. I now, with the bistoury, opened the trachea in the middle, dividing the fifth, fourth, and third rings. This incision was instantly followed by a spurt of mucus and flakes of false membrane, with decided relief to the patient. Pausing, with the lips of the orifice held lightly apart, until these convulsive efforts had in a measure subsided, I raised in succession, with the tenaculum, the margins of the tracheal incision, and removed with the scissors a semi-elliptical piece on either side, so as to form an oval orifice, about three-eighths of an inch long, and one-sixth or a little more, broad. The lungs and trachea were now speedily relieved through this opening, of a good deal of mucus and false membrane, though a regular

layer of false membrane, covering the back part of the trachea, could still be seen through the orifice. A leaden wire, about one-eighth of an inch in diameter, chosen for its non-elasticity, was brought round from the back part of the neck, and the ends bent to a little more than a right angle, so as to take a deep hold near the surface of the wind-pipe, and draw the sterno-hyoid muscles and all their coverings apart, leaving a clear gaping wound in the neck, with so much free space above the new tracheal orifice, that it was not likely to be drawn up under the integuments and obstructed in gulping or deglutition. The leaden wire was then moulded on the neck, so as to rest smoothly and easily, without liability to displacement. Thus placed, it fulfilled its office well; for the patient, you will recollect, could turn about in the bed, and run around the floor with little inconvenience from it. My intention in resorting to the excision of a piece of the trachea, and leaving a defined opening rather than the usual incision of the rings, with insertion of a tube, arose from the difficulty which attends the discharge of the tenacious mucus and membrane through a curved tube, and the keeping of it clear for respiration, as well as from a desire to avoid the irritation which the presence of a foreign body must more or less excite. In this instance we were successful in getting a new breathing orifice larger than the rima glottidis, admitting of easy respiration, and enabling us to remove with the forceps such flakes of false membrane as were too large to be coughed or blown out. The size of the orifice was besides luckily proportioned, for as it was allowed to close gradually and spontaneously by granulation in front of it, by the time it became shut, the ventricles had become cleared of the false membrane, and the respiration took place regularly and easily by the natural channel without any evident impairment of the voice. Now, twenty-one days after the operation, the wound in the neck is solidly cicatrized, and the patient is gone into the country to spend the summer."

During the operation, the child gave scarcely any expression of suffering; there was no struggling, or attempt at crying, showing that the asphyxia had advanced so far as very much to dull his sensibility to pain. Immediately upon the cut being made into the trachea, the air rushed out with a loud hissing and gurgling sound, bringing with it a very considerable quantity of thick mucus, muco-pus, and fragments of false membrane, which were scattered in all directions. In a short time the respiration became more quiet, and it was easy to perceive that the posterior wall of the trachea was covered with a deposit of false membrane, of a white and glistening appearance. For some days after the operation, Messrs. Hewson, Horner, and Bache remained constantly with the child, and by their watchful care assisted very much in procuring the favourable result of the case.

4 P. M. The child is sleeping quietly and tranquilly, with a beautiful rosy flush upon the cheek, instead of the pale, waxy tint which he had presented before the operation. The hands also had assumed their natural colour, and the gums and tongue, which had been pale before the operation, were now of a deep red.

He continued to do well through the remainder of the day and night, breathing entirely by the artificial opening, and in the act of coughing, which occurred frequently, forcing considerable quantities of mucus, muco-pus, and softened membrane through the aperture. He had no dyspnœa at any time, and slept a good deal during the night.

June 5th. Doing very well. Sits up in an easy chair, amusing himself with his toys, and on one occasion ran across the floor after a ball, without the least apparent trouble. The removal of the piece from the trachea pre-

cludes entirely the necessity of a canula and all the apparatus belonging to one, and must save the child a great amount of irritation and vexation. The only apparatus that he wears is the thick leaden wire, bent into hooks at each end. This is passed around the neck, and the hooked ends placed just within the lips of the wound, in the external soft parts of the neck, (not touching the trachea at all,) so that the child is not annoyed by it in the least, but can move about in all directions, without impediment.

During the morning the pulse was 116, and the respiration 40, while he sat up; the respiration fell to 30 during sleep. In the afternoon the pulse was 110, and the respiration 36. He ate a gill of chicken broth, and a piece of bread without any difficulty. In drinking, some of the fluid generally passed through the glottis into the larynx, and, producing cough, was expelled through the tracheal opening.

In the course of the night the tracheal opening became partially closed by some hardened mucus, and he breathed somewhat through the nostrils.

6*th.* Had a very good night. Pulse this morning, 110; respiration 30. In the course of the morning he ate a few strawberries, which produced some gastric uneasiness, and slight peevishness. He was ordered on this account, a tablespoonful of simple syrup of rhubarb, with four drops of laudanum. Tea and toast, and chicken water for diet.

In the afternoon he was so well as to play actively about the room. He had one bilious stool. Early in the evening he was able to whisper in a very low tone. A little later, after an attack of loud croupal cough, he ejected a piece of firm, false membrane, as large as the thumb nail, from the mouth, and soon afterwards another portion from the tracheal orifice. At 9 P. M. he succeeded, after several strong efforts, in blowing out a lighted lamp, though the opening in the trachea was not apparently at all diminished.

7*th.* Has had a very good night, sleeping a great deal. One stool in the night. Through this day the pulse ranged between 112 and 120, and the respiration between 22 and 34. Is in excellent spirits; appetite good; no membrane expelled to-day, but a good deal of mucus. With a towel over the wound he was able, in the evening, to articulate distinctly.

8*th.* A very good night. Pulse to-day between 96 and 116; respiration 24 and 32; in excellent spirits; appetite good; diet tea and toast, and broth; one stool in the day. Ejects a good deal of mucus, and occasionally some bloody mucus from the wound. Articulation louder and more distinct.

9*th.* Has slept nearly all night. To-day a good deal of mucus tinged with blood was discharged from the tracheal opening; respiration easy and natural; wound dressed with a linen rag covered with simple cerate, secured by an adhesive strip. This seemed at first to annoy him a good deal, but he soon became accustomed to it.

10*th.* Doing very well. Wound diminishing in size; dressed as yesterday.

28*th.* He has continued to do well. The wound in the neck filled up by granulation from the bottom, so that he last breathed through the orifice in the trachea on the 15th, or perhaps very slightly, on the 16th. The cicatrization of the wound was not complete until the 26th.

In the latter part of July, the child remained perfectly well, but there was a perceptible hoarseness of the voice, such as I have observed to follow in several other cases of true croup.

Case II.—*Pseudo-membranous Angina followed by True Croup—Death on the eighth day.*—R. R., a girl, between six and seven years of age, born of

healthy parents, and enjoying good general health, though not of robust appearance, having had scarlet fever, was taken sick in the evening of November 24th, 1848, with sore throat, slight, dry cough, coryza, and some feverishness. A dose of salts and magnesia was given, and she seemed better the next day, but had considerable fever again in the evening. On the 26th continued sick, suffering from sore throat and slight fever, though up and dressed. She passed most of the 27th in bed, with fever, sore throat, guttural, hoarse voice, swelled cervical glands, loss of appetite, and other signs of sickness. In the evening, and during the night, she had violent fever, for which sweet spirits of nitre was given.

Nov. 28th. I was sent for to-day, and saw the child for the first time. She was dressed and going about the room, looking pale and languid, but not at all ill. There was very moderate heat of the skin, and a rapid, rather small, and soft pulse. There was considerable coryza, with thick muco-purulent discharges, and some incrustations about the nostrils. She complains of sore throat in swallowing, though there is very little real difficulty of deglutition. On examination of the fauces, the tonsils were found to be very much enlarged, and covered all over with a thick, uniform layer of yellowish-white exudation. The same exudation existed upon the velum and half arches, and upon the posterior wall of the pharynx. The tongue was coated with a thick, dirty-white fur, but was moist. There was a good deal of salivary secretion, which flowed freely when the mouth was opened for examination. The breath was slightly offensive. The submaxillary and cervical glands on each side, were considerably enlarged, and slightly painful to the touch. The bowels had not been moved for twenty-four hours. Ordered the fauces to be touched with a solution of nitrate of silver, ten grains to the ounce, three times a day; she was to take two drachms of syrup of rhubarb at once, and two hours afterwards to begin with antimonial wine two drops, and sweet spirits of nitre five drops, every two hours; the dose of the antimonial wine to be increased to four drops, if it does not occasion vomiting.

Evening. Better. Some of the exudation has been detached. Voice clear; very little cough; no oppression. Continue the remedies.

29th. Has had a very good night. Coughs occasionally, but not frequently; the sound is hoarse and croupal, and the effort occasions a slightly stridulous sound. Voice is guttural, but not hoarse. The exudation is disappearing from the tonsils. Very little heat of skin. Pulse rapid, soft. Swallows water and ice-cream perfectly well; no stool. To have another dose of syrup of rhubarb. Continue the ant. wine, and sweet spirits of nitre.

Evening. Only change observable is that the cough is rather more croupal in its character. Voice good. No dyspnœa; has had three stools. Solution of nitrate of silver to be doubled in strength.

30th. Has had a quiet night. Cough infrequent; when forced, it is somewhat hoarse, and accompanied by a feeble stridulous sound. Voice nearly natural; slightly hoarse; skin warm, not hot; pulse as before; patches of membrane still visible on the pharynx, and on the sides of the uvula; none on the tonsils. Uvula very much swelled; tonsils less so; both these parts intensely red. Continue application of lunar caustic four times in the twenty-four hours. Continue antimonial wine.

Dec. 1st. Worse. Has had a good deal of difficulty of breathing since daylight. Cough more frequent; smothered; preceded and followed by stridulous respiration. Voice hoarse and weak; considerable fever; pulse 150. Skin hot, and face somewhat flushed; expression tranquil. To have an emetic

of powdered alum, and a hot bath; application to the fauces continued. Antimonial wine gtt. iv every two hours.

5 P. M. Much oppressed, with loud stridulous sound in coughing. Gurgling, but no considerable stridor, when asleep; pulse 144; respiration 40; skin warm; tongue moist, and heavily coated. ℞.—Cupri sulphat. et Quin. sulphat. āā gr. vi; aquæ fontis, ℥i; ft. solutio. To be applied to the fauces upon a sponge-mop. ℞.—Hydrarg. chlor. mit. gr. i; pulv. Doveri gr. vi; pulv. antimon. gr. iii. In chart. vi.—One to be given every hour. Chicken-water as diet.

10 P. M. Dreadfully oppressed. I gave the remainder of the powders, which produced immediate vomiting of thick, glairy, viscid mucus, but no false membrane. Soon afterwards four grains of calomel were administered, but were rejected by vomiting.

Midnight. Condition unchanged; violent jactitation at times, alternating with dozing. Severe orthopnœa, with loud stridulous sound in both inspiration and expiration. Four grains of calomel to be given at once, and two grains every two hours afterwards.

2*d. Morning.* No improvement. Dr. S. G. Morton visited the patient with me. Two grains of calomel every two hours. ℞.—Iodine gr. iii; potass. iodid. gr. vi; aquæ ℥i. M.—Give ten drops every two hours, alternately with the calomel.

Died at 7½ P. M., having suffered from most distressing orthopnœa throughout the day.

Autopsy.—Larynx and trachea occupied by a tubular false membrane, forming a perfect mould of the parts upon which it had been effused, covering over the edges of the glottis, the vocal cords, and dipping into the ventricles of Morgagni. The false membrane extended also into the bronchia, as far as their ramifications in both lungs could be traced. The membrane was about a line in thickness, firm, of considerable tenacity as far as it could be traced, and of a milk-white colour. It adhered but slightly to the mucous membrane beneath, as it was drawn out, without breaking, from the fifth and sixth ramifications of the bronchia, by traction upon the tubuli filling the primary bronchia. The mucous membrane of the larynx, trachea, and bronchia, presented a minute vascular injection of a dark-red colour. The lungs exhibited a considerable amount of emphysema, and in parts presented the first stage of pneumonia.

Case III.—*Pseudo-membranous Angina, followed by True Croup—Tracheotomy—Death on the seventh day.*—J. R., a girl, between four and five years of age, sister of the child whose case has just been described, and who, like her, had had scarlet fever, was also taken sick on the 24th Nov. 1848. The symptoms were the same as in the previous case, up to the time of my first visit, except that the child had a good deal of vomiting at the onset, and had been attacked with croupal cough and some oppression the night before I saw her.

Nov. 28th. Morning. My first visit. The child was dressed and moving about the nursery, but looked pale and languid The voice was guttural and hoarse. Upon examining the throat, the tonsils were found to be very much swelled, and the whole fauces covered thickly with a yellowish-white exudation. The gums also presented a thin whitish layer of exudation. The tongue was loaded with fur, but moist, and there was a good deal of purulent coryza. Ordered the fauces to be touched with a solution of nitrate of silver, of ten grains to the ounce; a cathartic dose of syrup of rhubarb to be given; the neck to be bathed with a stimulating liniment; a short time after the cathartic

the child was to be put upon the use of small doses of antimonial wine and nitre, the quantity to be increased as the stomach bore it, and the child to be confined in bed, and to a bread and milk diet.

Evening. Some heat of skin; pulse 150; small and soft. While asleep there is a good deal of snoring sound in the respiration, which becomes at times faucial gurgling. Voice weak and smothered, from hoarseness, but not at all whispering. Cough rather frequent; guttural, short, and hard. No stridulous sound in the respiration while the child is quiet, but during a forced inspiration, it becomes very perceptible. When the cough comes on, the child generally rises up instantly in the bed, and evidently suffers from considerable oppression and anxiety. Drinks without any difficulty; continue the nitrate of silver application. To take a dose of three grains of calomel immediately, the antimonial wine and nitre to be resumed two hours afterwards.

29*th.* Has had a pretty good night, without much oppression. The cough this morning is short, guttural and smothered, and the voice hoarse and weak, but not whispering. Pulse 160, small and very compressible. Temperature of surface nearly natural; slightly warm. Tonsils exhibit less of the exudation than yesterday; back part of the fauces still thickly covered. Continue remedies.

Evening. Has more cough, which is short, sharp, croupal, and accompanied by stridulous sound during the inspirations. When perfectly quiet and awake, no stridulous sound is perceptible. When asleep there is a good deal of faucial gurgling, but no whistling. Voice becoming weaker; though still full and distinct when an effort is made. Pulse 160; respiration about 40; skin warm; fauces as before; expression good; notices everything; but has slept a good deal through the day. Drinks very well, and takes ice cream with ease and appetite. Solution of nitrate of silver to be doubled in strength, and applied by means of a sponge mop very low into the pharynx, so as to express some of the solution upon the glottis; the application to be made four times in the twenty-four hours. ℞.—Hydrarg. chlor. mit. et pulv. Doveri, āā gr. iii.—In chart. no. vi; one to be given every hour. An emetic of powdered alum to be given after the powders, if oppression be severe.

30*th.* Has had a restless, bad night, with a good deal of oppression; pulse and temperature as yesterday; cough frequent, short, smothered, preceded and followed by marked stridulous sound. Voice whispering, unless a strong effort be made, when it still retains some strength. Respiration is stridulous now whenever any exertion is made, and sometimes when the child is perfectly quiescent. Expression good; spirits excellent. The exudation has disappeared from the tonsils and uvula, but the posterior wall of the pharynx is still thickly covered. Drinks very well; tongue moist; clearing off at tip and edges, where it is red; coated in centre. The emetic was not administered. To have an emetic of powdered alum immediately, and after its operation is over, to take twenty drops of syrup of ipecacuanha every hour.

Evening. Seems to be better in some respects. Respiration snoring and accompanied by gurgling, but less stridulous than before. Skin natural; pulse rapid and small. The alum operated freely, but brought away no false membrane. Remedies continued.

Dec. 1*st.* Has had a bad night; sitting up the greater part of the time in the arms of the nurse; cough more frequent and smothered; voice a mere whisper; stridulous sound in inspiration and expiration, both of which very much laboured. Paroxysms of coughing occur from time to time, and are attended with violent suffocation. There is a well-marked cyanotic hue of the

integument covering the upper part of the thorax. Face pale and contracted; violent action of the alæ nasi.

The degree of dyspnœa had now become so urgent, that I proposed to the father the operation of tracheotomy, in case it should be agreed upon in consultation. He expressed himself in favour of it, and, accordingly, Dr. Pancoast and Dr. C. D. Meigs met me in consultation at 11 A. M.

It was determined to postpone the operation for a short time, in order to try the effect of a prolonged warm-bath. The child was placed in a bath at 95°, the temperature gradually raised to 100°, and the bath continued twenty minutes. It was productive of no good result, however, for soon afterwards there was an attack of threatened suffocation, attended with violent tossing of the limbs and body, most distressed expression of the countenance, short, convulsive cough, extreme paleness of the face, and the operation was at once determined upon. It was performed by Dr. Pancoast, at 12½ P. M.

Condition just before the Operation.—The child is disposed to sleep a good deal, doubtless in consequence of the partial asphyxia under which she labours. The face is pale, the features contracted, and the expression anxious; respiration 36, laborious, and attended with loud, shrill, stridulous sound. The expiration is nearly as difficult and labouring as the inspiration, while both are imperfect. It seems as though not more than the upper lobes of the lungs are distended by the act of respiration. Pulse 164 and small; temperature natural.

Description of the Operation.—The account of the operation was kindly furnished me by Dr. Pancoast, and is given in his own words. "The structures of the neck, in the child operated on December 1st, were such as presented the least possible difficulty in the performance of the operation,—the neck being long and delicate, but little charged with fat, the sterno-hyoid muscles slender, and the thyroid gland very small. The operation was done precisely as in the other case (Case 1st,) excepting that it occupied much less time, and that the edge of the knife was employed to do little more than divide the skin and superficial fascia. The cellular tissue in the middle line of the neck, as well as the tracheal sheath and isthmus of the thyroid gland, were separated readily by tearing them up with the aid of a couple of pairs of forceps. Not a ligature was required on artery or vein. Two venous trunks filled with blood were seen, as in the former case, running down on the front part of the trachea between which the separation was made. After the excision of an elliptical piece from the front part of the third, fourth, and fifth rings of the trachea, the inner circumference of the trachea was found lined with a false membrane of much density and toughness. This was so tough, that in attempting to detach it from the side next the larynx by pulling on it with the forceps, the larynx was drawn downwards before the membrane broke. In this case, the margins of the wound in the neck remained sufficiently well apart to render it unnecessary to resort to the leaden wire, or any other means of holding them asunder. The piece excised in this case was about a third of an inch long, by about two-tenths of an inch broad. I made it larger in this case, in consequence of having seen how well a wound of twice this length, held apart for a couple of hours, with a thread passed through the divided ends of one of the cartilages, was borne by a little girl of five years old, from whom I had with entire success, extracted a piece of stout slate pencil an inch long, from the left bronchus. The child bore the operation without a struggle, and almost without a murmur."

Half an hour after the operation, the pulse was 168, small, and somewhat uneven. The respiration was 28, deep, full, generally easy, but slightly

irregular and sighing; and occasionally interrupted by paroxysms of coughing. No action of the alæ nasi whatever; expression much more tranquil; face still very pale; though not quite so much so as just before the operation. Intelligence perfect.

5 P. M. Respiration easy and quiet; except that interrupted occasionally by paroxysms of coughing; pulse 152; fuller and stronger; regular; skin warmer than before operation; cheeks present a very slight flush; eyes bright and intelligent; tongue and lips dry. There has been one copious stool since the operation. The child has drunk several ounces of water, and has taken some ice cream without difficulty or coughing.

The patient continued easy and tranquil until a little after nine o'clock, when she was suddenly seized with difficulty of breathing, owing to the effusion of a viscid mucus into the trachea and bronchia. The dyspnœa produced by the filling up of the air-passages went on increasing until 10½ P. M., when it caused death. No false membrane was at any time expelled through the tracheal opening.

Autopsy.—The larynx, trachea, and upper bronchia were filled with cylindrical moulds of false membrane, which adhered with very little tenacity to the mucous membrane beneath. The exudation was of a duller tint than in the previous case, being rather of a dirty white, than of a pure white colour. It extended more deeply into the right than into the left lung, descending as low as the sixth or seventh ramifications in the former, but not lower than the fourth or fifth in the latter. As traced downwards it was found to become gradually softer, and almost diffluent, until at last it was replaced by a thick dark-coloured viscid fluid, which looked like recently exuded fibrine. The mucous membrane upon which the plastic deposit reposed was vascular and of a dark red colour.

The lungs presented the first stage of pneumonia in the posterior portions of the lower lobes, and traces of interlobular emphysema in different parts. In other respects they were healthy. There was no serum in the pleural cavities, and not more than a teaspoonful in the pericardium. The large veins of the thorax were filled with very thick, grumous black blood.

Case IV.—*Pseudo-membranous Angina followed by True Croup—Tracheotomy and Recovery.*—J. R. a girl, just nineteen months of age, sister of the children whose history has been given in cases second and third, a healthy, though not robust looking child, was seized with the sickness about to be detailed, on the 14th of December, 1848, not quite two weeks after the death of her sisters. It should be remarked, however, that this child was attacked with several of the symptoms of the disease on the very night of the death of the child whose case is detailed in Case II., viz. the 1st Dec. These symptoms were hoarse, croupal and rough cough, considerable fever, and deep redness with swelling of the fauces, but no exudation. I applied a solution of nitrate of silver (℈j to ℥j) to the fauces two hours after the symptoms were first noticed, then gave an emetic of alum, and a few hours afterwards two grains of calomel. On the following day the child was bright and lively, and entirely without cough. Five days after this she was again seized in the night with violent fever, and difficulty and pain in swallowing, as she refused for several hours to take anything except upon compulsion. I cauterized the throat again, gave a dose of castor oil, then administered small doses of antimonial wine and nitre through the day, and in the evening repeated the cauterization. On the following day the child appeared to be perfectly well, and my visits were discontinued.

On the 14th of December, seven days after this attack, she again fell sick with fretfulness, languor, diminution of appetite, and short, dry, rather frequent cough, but had no fever. On the 15th, the cough continued and had become somewhat hoarse, and I was sent for.

4 P. M.—I was very much struck at my first visit with the insidious character of the onset of the disease. As I ascended the staircase, I saw the child walking across the landing with her elder sister, dressed as usual, and with the exception of slight paleness, and a certain languor of expression, seeming to be in good health. During the morning she had been in very gay spirits, mimicking those around her with the greatest archness. And yet, at this very instant, there was a condition of disease in her fauces, which would in all probability extend to the larynx, and if so, expose her life to the most imminent danger.

Upon examination I found the fauces red, and the tonsils considerably swelled, particularly the right one. This tonsil was covered upon its posterior two-thirds with a thick, yellowish-white exudation, which extended very slightly upon the right half arch. There was no exudation upon the left side. The sub-maxillary and cervical glands were a good deal swelled on the right side, and somewhat, but less so, upon the left. The cry was a little husky. There was no heat of skin, and but little disturbance of the circulation. I immediately touched the tonsils and fauces as far down as I could reach with a stick of lunar caustic, and ordered a powder containing a grain of calomel, a sixth of a grain of nitre, and a twelfth of a grain of precipitated sulphuret of antimony to be given every two hours. The child was to be warmly clothed, and kept upon a thin milk and water diet. I requested that Professor Samuel Jackson might meet me in consultation in the evening.

Accordingly we met at 9½ P. M.—Child sleeping restlessly; respiration somewhat accelerated, with slight faucial gurgling, but no stridor; skin hot and dry; cheeks somewhat flushed; pulse quick and soft; after waking the cough was dry and husky, with a perceptible croupal sound. The cry was full and loud, but at the same time slightly hoarse. Has had one stool, and vomited once after taking three powders. The exudation has nearly disappeared from the fauces, and the mother says that she saw some fragments of a thick, whitish substance in the matters vomited, which were probably the portions of exudation that have disappeared. Fauces, and particularly the tonsils, of a bright red colour. To continue the powders. ℞.—Liq. potassæ, gtt. viii; aquæ, ℥ii. M. Give a dessertspoonful every two hours. Fauces not touched this evening.

Dec. 16*th, Morning.* Has had a pretty good night. During sleep the pulse was 114, soft and regular, and the respiration 20, easy, regular, accompanied by faucial gurgling, but unattended with any effort. Skin warm and face slightly flushed. When waked the cough was harsh and croupal, and preceded by a slight stridulous sound. The cry was husky but not at all smothered. Cervical glands on both sides of the neck somewhat swelled. Patches of yellowish-white exudation of considerable size, were visible on each tonsil, and there was a small spot also on the pharynx. There is a good deal of difficulty in swallowing, the act of deglutition exciting violent coughing. No appetite. No stool, and no vomiting. Fauces to be touched with a solution of lunar caustic of forty grains to the ounce; the powders and potassa mixture to be continued, and an enema of three grains of Dover's powder in a little starch water to be given. Milk and water diet.

10 P. M. Sleeping. Respiration 20, easy, without any stridor or effort, and attended with only very slight faucial rattling. Pulse 114 and soft. No

heat of skin. On the contrary, the forehead and cheeks are pale, cool, and covered with cool perspiration. When roused the cough was somewhat humid, but the croupal sound was also present. The inspiration was slightly stridulous when an effort was made. Fauces contain less of the plastic deposit than in the morning. Cervical and sub-maxillary glands swelled. The act of deglutition still accompanied with choking cough and suffocation. Has had one liquid stool. In consequence of the coolness of the surface and sweating, the antimony and nitre were suspended, and a grain of calomel ordered to be given alone every two hours. The fauces were touched with a solution of lunar caustic of a scruple to the ounce. The potassa mixture was continued, another Dover's powder enema ordered, and the following ointment directed to be applied to the front of the neck. ℞.—Iodini gr. v; ungt. hydrarg. ℥ii. M.

17*th, Morning.* Has slept a good deal. Had three stools between 10 P. M. and 3 A. M., when an enema of three drops of laudanum was given and the calomel suspended. Two stools after this, after which one of the Dover's powders was given by injection. There was a good deal of sweating in the course of the night. Up to this time 18½ grains of calomel have been taken.

Present Condition.—While asleep the respiration is 18, regular, and attended with some roughness of sound both in inspiration and expiration, but without whistling. Pulse 124; soft and small. A slight flush upon the cheeks. Expression tranquil. When waked, the cough was decidedly croupal, somewhat smothered, and preceded and followed by a well marked though faint stridulous sound. The voice was very hoarse and becoming weak. Skin warm, but quite soft and moist. Deglutition rather difficult, and always followed by a paroxysm of coughing. There is some exudation upon the posterior wall of the pharynx, and a very little on the posterior edges of the tonsils; none on the velum. Fauces red and swelled. Tongue presents a thick coat of white fur; it is moist. She refuses everything but water. ℞.—Hydrarg. chlor. mit. gr. vi; p. Doveri gr. iii: in chart. vi; one every two hours. Suspend the liq. potass. and substitute the following. ℞.—Ammon. muriat. gr. xxxii; ext. glycyrrhizæ ℥ss; syrup. simp. ℥ss; aquæ ℥iss. M. A teaspoonful every two hours. The ointment to be continued. An emetic of powdered alum to be given immediately.

Evening. The alum emetic operated very well, and brought away a quantity of very viscid mucus with one patch of membrane of the size of the finger nail and several shreds. Through the morning the child slept a good deal, and was pale and exhausted; the respiration was at 18, and the pulse at 132. On account of the exhaustion the calomel was suspended, and nothing but the muriate of ammonia given; while a tablespoonful of light beef tea was ordered to be administered by force, if necessary, every two hours.

In the afternoon the voice was whispering and the cry smothered. The child sat upon the lap of the nurse in very good spirits, and looked bright and lively. The fauces were red, and only very small patches of exudation were to be seen on the tonsils.

In the evening (10 P. M.) she seemed to be better. The respiration was 20, easy, and attended with only a slight degree of roughness. The pulse was 92; the cough short and smothered, and the voice whispering. The throat was touched with a solution of the nitrate of silver of ten grains to the ounce; the muriate of ammonia and ointment were continued; and the beef tea ordered to be given when she waked.

18*th, Morning.* Has had a very good night. This morning the respiration is

from 18 to 20, and easy. There is no stridulous sound, but merely a slight roughness in the breathing, which appears to be faucial. The voice is improved, as she can, with a strong effort, make herself heard across the room. Cough still hoarse and smothered and accompanied by a faint stridor. Deglutition much easier. There are still visible a few very small patches of white deposit on the tonsils. Tonsils much less swelled and of a less bright red colour. Pulse from 100 to 108; soft. Skin natural as to temperature; soft and moist. Much sweating through the night. Coloration of the face good, showing that the aeration of the blood is going on well. Has had four stools, the first of which was black, and the last yellowish in colour. Tongue moist and moderately furred. In excellent spirits, being much disposed to play and be amused. Strength excellent. Remedies continued.

Evening. Not quite so well. More dull and languid. Respiration easy while she remains quiet, but becomes stridulous as soon as she is disturbed. Voice again whispering. Cry weak and smothered. Deglutition not so easy. Pulse 92. Respiration 20. Suspend the mur. ammon. mixture. ℞.—Hyd. chlor. mit., gr. vi; p. Doveri gr. iii. M. In chart. vi. One every two hours. An alum emetic to be given.

19*th*, *Morning.* Two teaspoonfuls of alum were given last evening, and acted very speedily and efficiently, causing the rejection of a good deal of viscid mucus, but not of membrane. The breathing was easier after this. No stool. Had a pretty good night.

This morning when asleep, the pulse is 100 and regular. Respiration 20; easy, though a faint stridulous sound is perceptible, which becomes strong and hissing in both the inspiration and expiration, when any effort is made and after coughing. Cough short and smothered; unfrequent. Voice whispering. Fauces still exhibit some patches of exudation. Deglutition easy, but followed by spells of coughing. Skin natural. Face rather pale, but the cheeks flush upon emotion, and the lips are scarlet, showing that the oxygenation of the blood is still active. Expression bright. Movements quick and decided. The powders to be suspended, and the ammonia mixture resumed.

Evening. An emetic of alum was given in the middle of the day, at first two teaspoonfuls, and then, without waiting more then ten minutes, the same dose again. This was immediately followed by violent vomiting, attended with great paleness, coldness of the extremities and disposition to faintness, so that for about twenty minutes the child seemed in danger of sinking. The matters vomited consisted of very thick, sticky mucus, and a few small shreds, but no patches of false membrane.

In the evening, the breathing was easy both as to performance and rate, but was accompanied in both times by a well marked stridor. Has had three black stools. The ammonia mixture suspended, and a mild anodyne pectoral dose substituted. A dessertspoonful of wine whey to be given every hour while awake.

20*th*, *Morning.* In the latter part of the night the child was restless and peevish, and had some stridulous respiration, but nothing like suffocation. One stool.

At present the respiration is constantly stridulous to a moderate extent, and becomes much more so when the child is disturbed. Voice whispering. Cough infrequent; short and smothered. Fauces clear of exudation except a very small speck on right tonsil. Mucous membrane of throat very red and granular. The tumefaction of that part has much disminished. Tongue coated with a dark, brown fur; moist. Continue the mixture. Suspend the ointment, and apply spirits of turpentine to the outside of the throat.

In the middle of the day, as the oppression continued, a teaspoonful of powdered alum with five grains of powdered ipecacuanha was ordered to be given every fifteen minutes until vomiting was induced.

10 P. M.—After two doses the emetic produced vomiting attended with a good deal of effort, causing the discharge of a good deal of viscid, tenacious mucus, but no membrane. Very slight relief was afforded by this.

Throughout the day there has been great difficulty of breathing. The inspiration has been very loud, prolonged, and sonorous, and the expiration the same, in a somewhat less degree. The sound was very acute and whistling, so that it could be heard all over the story in which the child was placed, though the house was a large double one, and it was also distinctly audible in the story below. The cough has been smothered and short. There has been much disposition to drowsiness throughout the day. Deglutition not difficult, though followed by fits of coughing. The voice is a mere whisper and the child makes but few attempts to speak.

After a careful consideration of the state of the case, and influenced a good deal by the wishes of the parents, especially the father, who was himself a physician, and who was exceedingly anxious that everything should be done to save his remaining young child, we determined to resort to the operation of tracheotomy. Dr. Pancoast was accordingly sent for. He arrived a little before midnight, and after some hesitation, proceeded to the operation, which was performed between 12 and half past 12 o'clock.

Description of the Operation.—Dr. Pancoast describes the operation as follows. "The operation in this case, which ended successfully, was performed in the night, with imperfect light, without the requisite number of assistants, and was one of much greater difficulty than in the previous instance (Case 3d). The child struggled violently, the neck was very vascular and charged with much adipose matter; the two large inferior thyroid veins were turgid with blood, and, with several large anastomosing branches between them, occupied the front of the trachea. The thyroid gland was also proportionately large, and the isthmus as broad as the lobes. The forceps could not effect the separation of parts here as in the former case (Case 3d), and the edge of the knife had to be used. In consequence, one of the cross branches of the veins was divided, and probably an ounce or more of blood was lost before the ends could be tied. The isthmus of the thyroid gland was separated from the trachea, grasped with two pairs of forceps, and divided between them. A ligature was then applied on the end of each section.

"The piece of trachea removed in this case was considerably (about a third) smaller than in the former instance, as I had entertained a fear lest the larger orifice, by diminishing the force of the expiratory current, had facilitated the accumulation of mucus in the bronchial tubes. In the course of the following day, however, we found it necessary, in order to make the breathing more easy, to enlarge the orifice.

"In this instance, profiting by my experience in former cases, I did not carry my incision through the integuments so near the top of the sternum, which I had found, by dividing a portion of the deep-seated fascia, allowed the atmospheric air, by the suction of the parts in inspiration, to get in and form an emphysematous swelling beneath the fossette of the sternum, which seemed to have an injurious effect on the breathing, and caused the large adipose cells of this region to protrude. This limitation of the incision downwards, increases somewhat the difficulty of the operation, by narrowing the space, but is, I believe, a matter of some importance.

"Notwithstanding the advice commonly given by surgeons in operations on

the neck, and especially by Bretonneau and Trousseau in that for croup, not to tie veins of moderate dimensions when cut, I deemed it safer to place a ligature upon them, to avoid the risk of suffocation by blood entering the trachea, of which there are many cases reported."

During the operation the breathing was very bad, the stridor being constant and loud, and the inspiration attended with violent labour and heaving of the chest. At the opening of the trachea there was no expulsion of false membrane from its cavity, though there was evidently a thin layer of the exudation covering the inner surface of the small oval piece of the tube removed by Dr. Pancoast.

Immediately after the operation the breathing became easy and quiet, and the child drank largely of water without any difficulty. Six drops of laudanum were ordered to be given as an enema. The chamber was to be kept at a temperature of from 74° to 76°. The diet to be milk and water. All other remedies were suspended.

21*st*, *Morning.* Has been sleeping tranquilly for the last two hours. Respiration quiet and attended with but slight effort; 24. Pulse 124; of good volume and force. Temperature natural; skin soft and not dry. Coloration very good; the lips being scarlet, and the cheeks and ears showing a faint pink tint.

2 P. M. Awake and sitting up on the table. Respiration noisy both in inspiration and expiration, and expiration attended with a good deal of effort. There has been an occasional discharge of thick, viscid mucus in small quantity, but no membrane, from the tracheal orifice. No breathing whatever through the nose or mouth. Expression bright and intelligent. Movements quick and strong. Sits up without any difficulty. Colour very good. Refuses everything but water, which she takes very well, though it causes coughing from the frequent passage of small quantities into the larynx and trachea, whence it is discharged through the tracheal opening. One stool.

In consequence of the difficulty of breathing it was thought advisable to enlarge slightlty he opening in the trachea, which had been made smaller than in the previous cases. Dr. Pancoast accordingly removed a very small portion, a mere clipping, from the left edge of the orifice. This was done without difficulty, and the child's breathing was evidently better afterwards. The leaden wire which had been placed around the neck to withdraw the edges of the external wound from the tracheal orifice, was now removed, as the soft parts had retracted sufficiently, and the pressure of the wire was irritating and inflaming the wound.

Evening. In the afternoon, while asleep, the pulse was 120, and the respiration 24. At present she is in excellent spirits, disposed to play and be amused. The respiration is noisy through the tracheal opening, but at the same time easy. The skin is soft and natural as to temperature. Some discharge of very thick, viscid mucus through the opening from time to time. Takes cold water very well, though some generally passes into the larynx and excites coughing. Has also taken some ice cream. To have an enema of four drops of laudanum. Diet, ice cream and milk and water.

22*d*. Has slept most of the night. There has been a very considerable discharge of viscid mucus from the trachea, perhaps half an ounce. Three stools since the operation.

At present she is sleeping rather heavily, with the pulse at 140, of good volume and force, and with the respiration at 27, without effort, though noisy both in inspiration and expiration. Surface rather warmer than natural. Wound does not look well; the edges are dry, and covered with a dirty-white

deposit, looking like plastic exudation. The integument around the cut is swelled and inflamed. Expression natural, save a little paleness and partial closing of the eyes. When awake this morning, was cross and irritable.

In view of the increased frequency of the pulse, and the unhealthy condition of the wound, the following prescription was ordered. ℞.—Hydrarg. chl. mit. gr. vi; antimon. sulph. præcip. gr. i; potass. nitrat. gr. xii. In chart. xii. S. One every two hours. The following ointment was to be applied frequently to the edges of the wound, with a camel's-hair pencil. ℞.—Olei ricini ℥ss; terebinth. canadens. gr. xv; ceræ alb. ℥ss. M.

Evening. Better; pulse has fallen to 120; respiration 25; easy and quiet; interrupted only occasionally by a loose mucous cough, and by the expulsion of mucus from the wound. Wound looks softer and more healthful; countenance tranquil; strength good. Takes ice-cream well; not thirsty. No passage of air whatever through the mouth or nose. This was carefully tried by holding a very light thread before those passages during sleep. Two stools to-day. Powders to be given only every four hours. To have two drops of laudanum, if restless. Diet, rice-gruel, and ice-cream.

23*d*, *Morning.* Has had an excellent night. Last evening was heard to sneeze distinctly, though no air could be detected as passing through the upper air-passages. At 11 P. M., after having had considerable oppression for some minutes, followed by a violent fit of coughing, she ejected through the tracheal orifice, two fragments of tough, white, false membrane, near a line in thickness, one of which was about as large as the little finger nail, and the other rather smaller.

This morning the pulse is 108, and the respiration 22, and easy.

In the middle of the day a thread suspended before the mouth and nose, waved backwards and forwards, showing for the first time clearly that laryngeal respiration had returned, and making it highly probable that the portions of false membrane which came away last evening, were those which had been occluding the passage through the glottis previous to, and for forty-eight hours after, the operation.

From this time forward the case went on in the most favourable manner, with the exception that there was an inclination to moderate diarrhœa, which was kept in check, and after several days arrested by the use once or twice daily, of injections of two drops of laudanum, and by the restriction to a diet of milk and thick rice-gruel, the latter being prepared with the addition of a small quantity of gelatine. Up to the first of January she continued rather weak and pale, and emaciated a good deal, but after that time, regained her usual looks. These symptoms and the diarrhœa were the only effects that could be traced to the calomel that we were obliged to administer, amounting in all to between twenty-eight and thirty grains.

On the evening of the 24th, she was first heard to speak in a faint whisper. On the 26th the voice had become much stronger, and on the 27th the cry was full and strong, and had a peculiar reedy sound, which I had heard also in Case I. During this time the wound was closing rapidly at the bottom by granulation, and on the 31st, it was so much filled up that the child was for the first time observed not to breathe through it even in coughing, or any other effort. It was finally cicatrized about the 6th of January, 1849. The only dressings employed were the ointment referred to above, and the use of adhesive strips, of which only one was applied at first, on the 26th of December, so as merely to approximate the edges of the incision, while as the tracheal opening became smaller, the number of strips was increased, and the edges of the wound drawn into contact.

Case V.—*Pseudo-membranous Angina and True Croup—Recovery under blood-letting, calomel, emetics, and cauterization of the throat.*—The following case is one to which I was called in consultation by my friend Dr. Henry H. Smith, to whom I am indebted for notes detailing the history of the attack prior to my visit.

L., a girl generally healthy, but subject to spasmodic croup, between three and four years of age, was attacked in the evening of the 28th of November, 1848, with the ordinary signs of spasmodic croup, for which the parents gave a warm bath and some of the mel. scillæ comp. She was better the next morning, and through the day, but was attacked again at night. During the 30th, she had a hoarse voice, croupal cough, and wheezing respiration all day, and in the night of that day suffered with severe oppression, the respiration being quick and stridulous, and the cough hard and dry. She had made no complaints of sore throat up to this time. On the 30th, she was cross and irritable, and but little disposed to play.

Dec. 1*st.* Dr. Smith saw her at 11 A. M. "Pulse quick and frequent; 120. Respiration accelerated, about 30; short and hurried; stridulous. Voice slightly hoarse; cough hard and barking. No complaints of sore throat. Tongue slightly furred; bowels constipated. Ordered: ℞.—Calomel gr. vi; pulv. sacch. alb. gr. xii: in chart. iii. S. One every two hours. Frictions with spirits of turpentine to the front of the neck, until the skin is reddened.

"7 P. M. Stridulous respiration and oppression increased. Pulse 130, and irritable; purged by the calomel. Ordered venesection to three ounces. ℞.—Pulv. aluminis ℥ss. A teaspoonful every half hour, till vomiting is induced. Coxe's hive syrup through the night; a warm poultice of mush to chest, and throat; warm pediluvium; emetic to be repeated in the night, if oppression returns.

"2*d.* Rested badly; considerable oppression; breathing quick and laborious; expiration strong; no mucous râle; lower part of left lung not filled by inspiration; livid around the eyes; throat inflamed, and left tonsil enlarged; patches of lymph on tonsils and fauces; disposed to sleep, and has stertorous respiration when sleeping; roused with difficulty; fauces touched with solution of nitrate of silver of thirty grains to the ounce. ℞.—Calomel gr. iv: in pulv. ii. One every two hours. After the powders are given, to have an emetic of alum. Omit the hive syrup. Renew the frictions with turpentine.

"*Evening.* No improvement; pulse very frequent; respiration stridulous; voice not much improved; repeat the frictions with turpentine, the warm poultice, and the alum emetic. To have a warm bath; hive syrup to be given occasionally through the night after the emetic.

"3*d.* Rested better; had considerable perspiration after the emetic; much disposed to sleep; has stertorous respiration, and is roused with difficulty; hoarse, croupy cough; voice hoarse; very feverish. The alum emetic was repeated, and brought away shreds and patches of lymph, of the size of the little finger-nail, with very little mucus, and a small quantity of blood. Fauces touched with the lunar caustic solution. To continue hive syrup. Ordered two dozen leeches to outside of tonsils, larynx, and trachea, to be followed by the application of warm cloths.

"2 P. M. Slightly relieved in breathing, and not so livid about the mouth and eyes. Has been freely purged. Continue warm applications to the neck; slightly debilitated by the depletion; has vomited again, and ejected more lymph from the free use of the hive syrup."

6 P. M. I saw the patient for the first time. She was decidedly better

than at the last note, though the respiration is still distinctly stridulous, the stridor being heard both in the inspiration and expiration, while the child is sitting quietly in a chair. Cough hoarse and croupal, and accompanied by loud stridor. Voice very hoarse, and somewhat smothered, though not whispering. Expression tranquil and quiet; rather languid. Skin warm and dry; pulse accelerated; soft. Fauces red and swelled, with small patches of whitish exudation on each tonsil, and on the posterior walls of the pharynx. R.—Hydrarg. chlor. mit. gr. viii: in chart. iv. One every two hours. Alum emetic to be given in the night, if there should be any suffocation. Fauces to be touched with the wash.

4th. Better; has taken two powders. Slept a good deal. As there was severe oppression at 5 A. M., the alum was given. It operated freely, and gave much relief. No stridulous sound now while she is quiet, but it becomes loud and distinct when she cries or coughs. Cough still hoarse and croupal; not at all loose. Voice hoarse, but decidedly better than yesterday. Right tonsil and posterior wall of the pharynx still exhibit small patches of exudation; none on left tonsil. Continue the powders, and repeat the application of the wash.

Evening. Much better in all respects.

After this time the child convalesced, and soon recovered entirely.

Remarks.—I would now ask the attention of the reader to a few remarks on the treatment of the diseases of which the cases given above are examples, and on the operation of tracheotomy.

It seems to be generally conceded by late writers on pseudo-membranous angina and laryngitis, that the most important remedies against these diseases, are emetics, mercury, and cauterization of the fauces and glottis. The opinions as to the propriety of blood-letting, are more at variance.

The importance of the frequent and persevering use of emetics, has been insisted upon by almost all writers, but by none so strongly, and with such force of proof, as M. Valleix. (See *Guide du Med. Prat.*, t. i. p. 357 *et seq.*) He there states that, of 53 cases carefully selected as instances of true, in contradistinction to false, or spasmodic croup, emetics were employed as the basis of the treatment in 31, and of these 15, or nearly half, recovered. Of the 22 others, on the contrary, in which emetics were only rarely given, but a single one recovered. In a paper by the writer, (already referred to,) the good effects of emetics were clearly shown in several of the cases detailed. Emetics were freely used in Case V., reported above, and evidently assisted materially in bringing about the favourable result which ensued. They were used also to a considerable extent in Case IV., but without producing any permanent relief. In Cases II. and III., in which the anginose affection constituted a prominent part of the attack, they were not, partly on account of the difficulty of administration, used to the extent that might have been desirable. In Case I., an emetic was given as soon as I saw the child, but the disease had advanced too far to be benefitted by anything short of tracheotomy.

Equally important with emetics, perhaps more so, in the treatment of the disease is mercury, given in considerable doses, and continued for some length of time. I am inclined to doubt, indeed, for my own part, whether it is not

by far the most important agent at our command, in the malignant cases commencing as angina, and proving fatal by the extension of the exudation to the larynx and trachea, and in many instances, to the deeper ramifications of the bronchia. Its great importance in controlling the extension of the exudation, and causing its dissolution or absorption, is clearly shown by the evidence of many high authorities, and particularly Dr. Bard of New York, Bretonneau, Rilliet and Barthez, and many of the English authors upon croup and angina. Dr. Bard, in speaking of mercurials, in his paper on Angina Suffocativa, (*Trans. Am. Phil. Soc.*, vol. 1,) says, "the more freely I have used them, the better effects I have seen from them." He gave calomel in the quantity of thirty or forty grains in five or six days, to children three or four years old.

In the seventh volume of the *North American Medical and Surgical Journal*, p. 66, is a very interesting account of four cases of pseudo-membranous angina, and croup, communicated to Dr. Caspar Wistar, under the title of "Cases of Gangrene of the Throat, indicating a treatment by the use of Calomel," by Dr. T. R. Beesley, then of Salem, New Jersey, now a well-known and extensive practitioner in this city. The first case detailed began as pseudo-membranous angina, and proved fatal in two and a-half days, by the extension of the disease to the larynx. The second case occurred in the same family as the first, the attack coming on the day after, exactly in the same manner. This case proved fatal in ten days, not from the extension of the exudation to the larynx, but from its upward direction to the nasal passages, and the subsequent occurrence of hemorrhage from the mouth and nostrils, and profound exhaustion, attended with petechiæ, and the sloughing of a surface upon which a blister had been applied in consultation. The third case occurred in the same family, the attack coming on the day after the death of the subject of the one just referred to. The duration in this instance was nineteen days. It began as angina, as in the preceding instances; the disease extended to the larynx, and on the fifteenth and sixteenth days, the child seemed almost hopelessly ill from the intense orthopnœa under which he laboured; nevertheless, he recovered. The fourth occurred in a different family, but in the same neighbourhood, thirteen months after those just cited. It was one of violent pseudo-membranous angina, lasting ten days, without extension, however, to the larynx. It terminated happily after a violent illness.

The two fatal cases were treated by a sulphate of copper gargle, by stimulants and tonics, and by a single purgative dose of calomel in each. The two favourable cases, which were attended by Dr. Beesley subsequently to the two others, were treated with large doses of calomel (from five to eight grains, twice or three times a day) alone, or in combination with antimonial powder or opium, and by a moderate use of stimulants. Dr. Beesley, in his observations upon the cases, makes the following remarks: "On a review of these cases, it would seem that large and repeated doses of calomel appear to be of primary importance in their treatment, and that salivation is neither necessary nor desirable."

Dr. Joseph Parrish (*New Jersey Med. Rep.*, Oct. 1848) recommends, in cases of membranous croup, small doses of calomel at first as a purge, and then in combination with Dover's powder, or ipecac., so as to obtain the diaphoretic and anodyne action of the one, and the alterative effect of the other. The writer insists particularly upon the use of anodynes, for the purpose of obviating the spasmodic element of the disease, which he conceives to exert a very serious influence upon the gravity of the disorder. He employs, in addition to these means, cauterization of the fauces, repeated every two or three hours, with a solution of nitrate of silver of a scruple to the ounce. He opposes the use of blood-letting, and states that the first cases which he met with died under that treatment. One of these, however, it should be remarked, was not an instance of true croup, but apparently one of simple laryngitis, or possibly of that purely spasmodic disease of the larynx, called laryngismus stridulus. Dr. Parrish treated five cases of croup in the mode above recommended, and of these four recovered. Of the four recoveries, however, in only two were there positive indications of the presence of false membrane, while in the other two there was no appearance of membrane either in the matters vomited, or in those passed by stool. I would suggest whether the two cases in which there was no membrane, might not have been instances of severe simple laryngitis, a disease in young children, in which I have frequently observed the most threatening croupal symptoms to last with great intensity for one and two days, and even longer, but a fatal case of which I have thus far had the good fortune not to witness, though I am well aware that they do occasionally occur.

Dr. Charles West, in his recent work, (*Lect. on the Dis. of Infancy and Childhood*, London 1848, p. 238,) places his chief reliance, in cases of croup attended with exudation in the fauces, on cauterization and emetics, but remarks that calomel is "not to be omitted." In croup unconnected with pharyngeal exudation, he recommends that mercury should be resorted to after the violence of the disease has been subdued by depletion and antimony, and remarks that "it counteracts the tendency to the formation of false membrane in the air-passages, and prevents or subdues that inflammation of the lungs which is so frequent and so fatal a complication of the disease." (*Loc. cit.* p. 229). He uses with this view calomel internally, and mercurial inunction. Mr. Porter (*Surg. Obs. on the Larynx and Trachea*, p. 45) seems to have less confidence in the effects of mercury in croup than many others. Mr. Ryland, on the contrary, (*Dis. of Larynx*, p. 146–7,) places very great dependence upon it, and many other English writers might be quoted who speak in the highest terms of its utility in the disease. The evidence of the English authors on this point is not, however, it seems to me, of equal importance with that of the French writers, as they have not, in their descriptions, drawn that rigid distinction between membranous and spasmodic croup, and simple laryngitis (laryngitis without exudation), which the authors of the latter nation have done for a number of years past.

Amongst the French authors who have particularly recommended and employed mercury against membranous croup, are Billard, Bretonneau, Trousseau, Barrier, Guersant, and Rilliet and Barthez. As a general rule, the writers just quoted administer it in rather large and frequently repeated doses, and many employ it also by inunction.

Mercury has also been highly eulogized by many of our own writers in the treatment of pseudo-membranous angina and croup. Indeed, to Dr. Douglass of Boston, and to Dr. Bard of New York, is apparently due the credit of having first applied it to the cure of these diseases. Of many others who have recommended it more or less strongly, I may mention the names of Drs. Rush, Kuhn, Stearns, Dewees, Eberle, Hosack, Condie, and Beesley and Parrish, a'ready quoted.

One of the cases reported above, Case IV., is, it seems to me, strongly illustrative of the power of mercury to arrest the progress of the exudation in pseudo-membranous angina. The subject of that case was a young child, whose two sisters (Cases II. and III.) had perished from the extension of the disease from the throat into the larynx, trachea, and far down into the bronchia, two weeks before she herself was attacked. It is reasonable to suppose that the disease in this case would tend to assume much the same features it presented in the two others. And so, indeed, it proved; for in a very few days, the plastic deposit covered the whole of the fauces, and from the gradual suppression of the voice and cough, the violence of the dyspnœa, and the persistent stridulous sound of respiration, it became clear that the larynx was involved. This was shown to be the case also by what occurred during and after the operation of tracheotomy, which was resorted to on account of the severity of the laryngeal symptoms. A thin false membrane was found lining the trachea, and two large patches of dense, fully formed exudation, were expelled through the tracheal opening, at the end of the second day after the operation. That the downward progress of the exudation was arrested in this case by medical treatment, seems to me a reasonable supposition, upon comparing the history of the case with that of the previous two in the same family, and upon a consideration of the early and rapid extension of the deposit, prior to the administration for some length of time of certain remedial agents. That mercury was the agent which produced this happy result, seems to me equally clear, from the fact that it formed the basis of the treatment.

Calomel also formed an important part of the treatment in case fifth, though from its union with active depletion and frequent emetic doses, it is doubtful in what degree the successful result was owing to the mercurial remedy. In the two fatal cases calomel was also used, but not to the extent which might have been desirable, from the fact that my attention was more taken up in those instances, with the attempt to arrest the progress of the exudation by frequent cauterization of the fauces. It ought to be remarked, however, that, from the advanced stage at which these cases were first seen, (three and a

half days' duration, and the fauces filled with thick dark-coloured exudation,) it was scarcely possible to expect much from any treatment.

Cauterization of the fauces was mentioned as forming another essential part of the treatment of the two diseases, as laid down by most recent writers. This is especially insisted upon, and is particularly important, in pseudo-membranous angina, where it is used to prevent the spread of the exudation from the fauces to the larynx. The remedy most generally employed with this view is nitrate of silver, either in the solid state, or more frequently in solution. The strength of the solution varies with different practitioners, from a saturated one to one of from a scruple to one or two drachms of the salt to the ounce of water. Dr. Samuel Parkman (see this Journal for January, 1849, p. 26) reports five cases of membranous croup treated by Dr. Clark, by the cauterization of the fauces, and by the use of Dover's powder. No other means were employed. The strength of the solution was two scruples to the ounce. Three of the five cases recovered. Dr. Joseph Parrish (*Loc. cit.*) employed a solution of a scruple to the ounce, applied every two or three hours. Dr. Charles West, of London (*Loc. cit.*, p. 238), states that in most instances a solution of a scruple to the ounce answers every purpose. When, however, the deposit of false membrane is very extensive, or the ulceration about the tonsils presents a sloughing character, he prefers strong hydrochloric acid, diluted with two or three parts of honey. This latter escharotic is the one which was chiefly employed by M. Bretonneau. He used it either pure or mixed with an equal quantity of honey, and applied it once or twice a day according to the necessity of the case. As a general rule, the solutions of nitrate of silver recommended by the French writers are stronger than those mentioned above. They are seldom less than a drachm to the ounce, and are often much more concentrated.

The nitrate of silver was employed in four of the five cases reported above. The case in which it was not used, did not, as stated, come under my charge until about half a day before it was necessary to resort to tracheotomy. The solution employed was one of a scruple to the ounce in Cases II. and III.; it was applied generally four times a day. In Case fourth, the fauces were touched at first with the solid nitrate, and once afterwards with a solution of forty grains to the ounce, and after that with one of half that strength. It was not, however, applied so frequently as in Cases II. and III. In Case V., the solution used was one of thirty grains to the ounce.

I was much disappointed, I may remark, in the effects of the local treatment in four of the above cases, as it seemed to exert but little influence upon the faucial exudation. This seemed to me to be particularly the case in numbers two, three, and four, while in number five, the application did appear to cause a speedy disappearance of the deposit of the fauces. There can be no doubt, however, that cauterization ought to constitute an essential part of the treatment in all cases of membranous croup and membranous angina, though

I am disposed to believe that it exerts a less powerful influence on the disease, than either mercury or emetics.

With a few observations upon blood-letting, I shall close my remarks upon the medical treatment of the affections under consideration, and pass on to the operation of tracheotomy.

My experience in regard to blood-letting in membranous croup has led me to the same conclusions as those to which Dr. Charles West has arrived. These are that depletion is of the utmost importance in idiopathic croup, or the form not preceded by pseudo-membranous angina, and which is generally marked by all the characters of active sthenic disease. Dr. West states (p. 227), "I have never met with an exception to the rule which prescribes the free abstraction of blood in every case of severe idiopathic croup, when seen at an early period, and before the purple lips and livid countenance, and failing pulse, announce the long continuance of a serious obstacle to the free admission of air into the lungs." That bleeding is not only well borne by children labouring under this form of membranous croup, but that it is highly useful, is, it seems to me, clearly shown by number five of the above cases, and also by several cases formerly published by myself. (See *Am. Journ. Med. Sci.*, April 1847.) On the contrary, so far as my experience goes, blood-letting is not indicated, nor does it prove useful, in cases of croup following pseudo-membranous angina, as that form of the disease is almost always associated with an asthenic condition of the constitution, which either forbids entirely a resort to such treatment, or the employment of it only to a very moderate extent. The rapidity and softness of the pulse, the paleness of the surface, the absence of heat, the early loss of strength, and the disposition to drowsiness and debility, from a very early period, all seem to point out clearly the necessity of abstaining in a great measure from this method of treatment. Dr. West remarks (p. 238), in regard to the form of croup connected with inflammation of the tonsils, soft palate, and fauces, and the deposit of false membrane upon them, that "under whatever circumstances this form of croup may occur, whether as an idiopathic malady, or as a sequela of measles, or of some other disease, it is generally attended with so great a depression of the vital powers as to contraindicate the employment of active antiphlogistic *treatment.*" He has occasionally, however, when it occurred as an idiopathic affection, applied leeches to the throat if there was much tenderness about the larynx, or if the croupy symptoms had early acquired considerable intensity. The two means on which he chiefly relies are "the careful and repeated cauterization of the fauces, and the employment of emetics."

It is impossible, in a paper like the present, to enter into a full discussion of the merits or demerits of the operation of tracheotomy, a proper consideration of which would require a great deal of space, and a reference to many different authorities. I shall therefore confine myself to a few brief remarks, being desirous merely of calling the attention of the profession in this country, to a more serious appreciation of the operation, which certainly seems to have

rescued two of the children whose cases are given above, from impending death.

It is well known that tracheotomy in croup has been held in slight favour for several years past, in this country, and in England. The reason of this undoubtedly is that the operation has failed in the great majority of the instances in which it has been performed. That such has been the result of the operation in this city I feel sure, though I have no means of ascertaining with precision the number of cases in which it has been resorted to. I have been able, however, to collect its results in five cases in which it was performed prior to 1848, and in four, exclusive of those detailed in the present paper, performed in that year, making nine in all, and in all of these it was unfortunate. To show the opinions of English writers upon it, the following quotations are made. Dr. Chas. West states that, in England "the result of almost every instance of the performance of tracheotomy in cases of croup, has been so unfavourable that the operation is scarcely looked on as a justifiable proceeding." Dr. Williams (*Lib. Pract. Méd.*, vol. ii. p. 256) is opposed to the operation, because of its dangers, of the few chances of success it affords, and because "it has been decisively negatived by Dr. Cheyne, Mr. Porter, and other of the best authorities." He states that "in general it can scarcely be said that the performance of the operation is justifiable." Mr. Porter (*Surg. Obs. on the Larynx and Trachea*, p. 64) says, "I have known and heard of it often, but never understood that it produced a recovery." Mr. Ryland (*Dis. of Larynx*, p. 159) remarks: "With regard to the general results of tracheotomy, when performed for the cure of croup, I have no hesitation in saying that they are so unfavourable as to warrant us in the strongest condemnation of it under almost every conceivable circumstance."

It is opposed also by Drs. Dewees and Eberle in our own country. Dr. Jas. Stewart (*Dis. Child.*, 2d ed., p. 86) says, in speaking of the operation, "It is indeed a desperate resource, and one which has not received the sanction of many eminent men, either in Europe or in this country, having produced the wished-for result in but few instances."

In opposition to this array of opinions adverse to tracheotomy in croup, I shall merely quote the statements in regard to its successful results, given by M. Valleix (*Guide du Méd. Prat.*, t. i. p. 389.) This writer tells us that he collected together 54 cases of undoubted true croup, treated without the operation, and found that 17 had been cured. Then, examining what had occurred in regard to the operation, he found, as M. Bricheteau had done before, that one in every three upon whom it had been performed, had recovered, a success almost precisely the same as had taken place in the cases treated by medical means alone. "But," he goes on to remark, "there is one consideration of very great importance, which gives an altogether different importance to tracheotomy, to wit, that in the immense majority of instances, the operation was performed under the most discouraging circumstances, and only when all other methods of treatment had proved useless, and the severity of the

symptoms, and the near approach of asphyxia, indicated impending death. Who will fail to see that a single cure, under such circumstances, is of much greater weight than several obtained in cases against which all the resources of the art had been applied from the first? Whence it follows that tracheotomy ought to be regarded as a great medical achievement, the honour of which belongs to M. Bretonneau, and all prejudices should vanish before the facts. It need not surprise us, therefore, to find that, in the course of late years, the operation has become very frequent, and has received the approbation of the best thinkers. I might cite the successful operations of MM. Scoutetten, Gendron, Senn, Petel, Maslieurat-Lajémard, Robert Latour, (*Clinique des Maladies des Enfans*, vol. i. p. 285,) &c.; but, in order to show what may be expected from tracheotomy, so dreaded by our predecessors, it is only necessary to state the number of operations performed by M. Trousseau, and the cures effected by him. M. Trousseau, the most ardent defender of the operation, has himself performed it 119 times, and has, it may be asserted, saved the lives of 25 of the patients who underwent the operation."

There is a point of view in which the operation should be regarded, which has not been adverted to by M. Valleix—I mean the question whether the operation itself is attended with danger. M. Trousseau (*Rilliet et Barthez, Mal. des Enfans*, t. i. p. 386), says, "tracheotomy and laryngo-tracheotomy, often performed for the removval of foreign bodies from the air-passages, are scarcely ever followed by fatal consequences; the operation in itself, therefore, is not dangerous." He also remarks, "These results prove, not that tracheotomy is dangerous, absolutely speaking, but that it may be so when the symptoms of asphyxia have been allowed to last a length of time before its performance." M. Guersant (*Dict. de Méd.*, t. ix. p. 377) says, "it removes at once the signs of asphyxia, and undoubtedly prolongs the lives of the patients, even when it does not snatch them from certain death." He states that he would recommend the operation, even if pneumonia of one side were present, though it offers but little chance of success; and adds, "but I feel sure that it does not add to the danger of the disease."

If it be true that tracheotomy is not in itself dangerous to life, and if it removes for a time, at least, the dreadful dyspnœa under which the patients labour, must it not increase in some measure the chances of recovery, by prolonging life, and thus giving to nature time to bring the diseased action to a close, and to the physician opportunity to administer the remedies most successful in opposing the extension of the exudation, and in promoting its dissolution and expulsion?

With regard to the cases of croup in which tracheotomy ought to be resorted to, it seems to be generally conceded by those who countenance its performance, that there is little, if, indeed, any prospect of success from it, when the plastic exudation has extended into the lungs; whilst, so long as the deposit remains confined to the larynx, trachea, and even, probably, the primary

bronchia, the operation is generally regarded by those who do not condemn it altogether, as entirely justifiable. I would state, as the result of my own slender experience, (limited to the three cases above,) and of my reflections upon the subject, that I would not hesitate, at present, to propose it, whenever I could believe that the false membrane was confined to the larynx and trachea, and whenever, after a careful and energetic employment of medical remedies for a proper length of time, the symptoms occasioned by the presence of the exudation in the air-passages, were such as to make me believe that the life of the patient was in imminent danger. I am well aware that M. Trousseau recommends a resort to it, so soon as the symptoms in the case reveal the presence of the deposit in the laryngeal tube, and perhaps this may be the result at which more extended observation and experience shall arrive; but, as I have seen several children recover from the disease under medical treatment, even after the evidences of the presence of the membrane in the larynx had existed for two, three, and four days, I should feel indisposed to recommend the surgical treatment of the malady, until after sufficient time and trial had shown the inefficacy of medical means. No doubt this very delay exposes the patient to the risk of the spread of the disease to the lungs, and the consequent almost certain failure of the operation; but the physician should watch the patient in the most searching and assiduous manner, and endeavour to determine whether such an event is taking place, and if so, at once propose the operation.

It becomes, therefore, of the highest possible importance to be able to ascertain what extent of the air-passages may have been invaded by the exudation. Unfortunately this is always very difficult, and often impossible. It has been thought by some that it could be determined by auscultation, but in many instances the laryngeal stridor masks all other sounds, or the entrance of air into the lungs is so imperfect, in consequence of the obstruction of the air-passages, that no vesicular murmur can be perceived, or it is so feeble as to yield no satisfactory results. It seems to be generally conceded at present, therefore, that auscultation cannot be depended upon for the determination of this point.

It has seemed to me, I venture to suggest, that we could infer with very considerable probability the extent of the exudation, by a careful consideration of the history of the case, and of the general symptoms. Is it not probable that the constitutional symptoms would be more severe in cases in which the exudation has extended far into the bronchia, than in those in which it is confined to the larynx alone, or to the larynx and trachea? In the former condition the aëration of the blood is vastly more interfered with than in the latter, for not only does the laryngeal impediment to the entrance of air (mechanical obstruction and closure by spasm) exist, but, the air which obtains admission into the lung is prevented, by the interposition of the false membrane, from coming in contact with the living surface of the bronchial mucous membrane, so that the interchange of oxygen and carbonic acid essential to hema-

tosis, can no longer take place over so much of the bronchial surface as may be covered by the deposit. In the other condition of things, on the contrary, we have only the laryngeal impediment present. What air enters the lungs, though it be in small quantity, is placed in its natural relation to the pulmonic mucous tissue, and will far better effect the change of the blood, than under the circumstances just referred to. It seems to me, therefore, that we should have, in the former case, a more disordered state of the circulation, and more marked symptoms of asphyxia than in the latter, unless, indeed, just before the fatal termination, when, no doubt, they would be much the same in both. In two of the operations recorded above, the membrane was evidently confined to the larynx in one, and to the larynx and trachea in the other, while, in the third operation, it was found after death that the disease had invaded the bronchia as far as they could be traced. Now, in neither of the subjects of the two former operations, was the pulse nearly so rapid as in the latter. In one of the two it was unfortunately not counted until the day after the operation, when it was found to be 116, but I feel sure that it was not over 130 before the operation. In the other case the pulse was between 120 and 130 before, and 120 after the operation. In the third case, on the contrary, it was 164 just before the operation, and had not been under 150 for four days prior to that time. In Case II., in which the operation was not performed, and in which the membrane was found at the autopsy to have greatly implicated the bronchia, the pulse was 140 and 150 for several days before death.

It seems probable, moreover, that in cases in which the membrane is extensively formed, the signs of asphyxia, the paleness of the surface, drowsiness, etc., will be particularly marked, and that they will have lasted longer and have come on more slowly, than in the instances in which the asphyxia depends solely on laryngeal obstruction. Might we not conclude, therefore, that the operation is particularly applicable to cases in which the dyspnœa and signs of asphyxia have come on rapidly, but in which, notwithstanding, the pulse remains not exceedingly rapid (below 140); whilst, in cases in which the asphyxia has come on more slowly, and in which the pulse is very frequent (over 140), and particularly in those in which it has been so for several days, is it not more probable that in such the exudation has extended to some distance into the lungs, and that therefore the operation is much less likely to be successful? Time and observation alone will show whether these suggestions have any real value.

As I have met with some persons who supposed that the false membrane almost always extended into the lungs in fatal cases, and that, therefore, tracheotomy must necessarily be useless when employed as a last resort, it will be well to quote the following facts to show how far this idea is from the truth. M. Hussenot (quoted by *Rilliet and Barthez, loc. cit.*, p. 318) states that of 120 cases in which the existence of the false membrane in the larynx, trachea or bronchia, was ascertained, it was found not to extend beyond the trachea in 78, while in 42 it had implicated the bronchia. It appears from

this table, therefore, that the exudation was present in the larger bronchia in about a third of the cases, but at the same time, it was proved that it rarely penetrates into the smaller ramifications. Dr. Charles West (*loc. cit.*, p. 221) says: "I have usually observed the false membrane lining the whole of the larynx, and reaching down to the lower edge of the thyroid cartilage, while the trachea contained nothing else than a puriform matter, or glairy mucus, sometimes of a reddish colour." I may state that of four autopsies of membranous croup that I have witnessed, in two the plastic deposit extended into the bronchia, in one it was present in the larynx and trachea, and in one it was confined to the larynx.

In regard to the mode of performance of the operation in the above cases, I am desirous of calling the attention of the reader to the fact that Dr. Pancoast removed in each, a portion of the substance of the trachea, and thus rendered unnecessary the use of canulas or dilating instruments. The only apparatus employed after the operation was the leaden wire described in Case I. which was used to keep the edges of the soft parts from closing over the tracheal opening. Even this was found unnecessary in Case III., owing to the superficial position of the trachea, and the retraction of the muscles and integuments. In the other cases the wire was removed in one about 14, and in the other 24 hours after the operation. This mode of operating was first recommended, so far as I can learn, and I believe practiced, by Mr. Lawrence, of London. It was afterwards successfully employed by Mr. Carmichael, of Dublin, on an adult, on the 28th October, 1823. (See *Trans. Dublin Coll. Phys.*, vol. iv. 1824, p. 312.) Various objections have been made to the removal of the piece from the trachea; amongst which are, that it does not give an opening of sufficient size, and that the loss of substance might, at a subsequent period, diminish the calibre of the trachea to a dangerous extent. To the first mentioned objection I think that the cases given above, and the one of Mr. Carmichael are sufficient answers. In regard to the second I may state that it is now upwards of eight months since the operation was performed in one, and two months in the other, and that no signs of such difficulty have appeared in either.

I cannot close these remarks without a short notice of the treatment pursued by MM. Bretonneau and Trousseau after the operation, and which is supposed to have a very great influence upon its result. M. Trousseau (*loc. cit.*, p. 377) is of opinion that the topical treatment after the operation is of the very greatest importance. In order to test the point, he treated twenty children in succession without these means, "and the results were so deplorable that I was obliged to return to the topical medication, with which I had, before this, succeeded far better."

The treatment referred to is as follows. When the child operated upon is vigorous, when it has energetically expelled the false membranes contained in the air-passages, and when the respiration is easy, from fifteen to twenty drops of a solution of nitrate of silver of six grains to the ounce of water should be

instilled several successive times into the trachea. This instillation is to be repeated four times on the first, three times on the second and third days, and once or twice on the fourth day, after which it is to be suspended. Concurrently with the instillation, the trachea is to be *écouvillonnée*, swabbed out or cleansed, by means of a mop, consisting of a very small piece of sponge fastened upon an extremely flexible whalebone, and moistened with a concentrated solution of nitrate of silver, consisting of a scruple of the salt to five scruples of distilled water. The latter treatment alone is necessary when it is found that the larynx only has been implicated. The cauterization with the sponge is to be repeated as often and continued as long as the instillations of the catheretic solution.

The instillations of water and the *écouvillonnements* are also of great importance in the treatment.

When the cough is loose and the expectoration easy, there will be no occasion for the instillation of water. Under the opposite circumstances, from eight to ten drops of tepid water should be instilled into the trachea once or twice in the hour; the water mixes with the mucosities, softens them and facilitates their expulsion. The water should always be instilled after the introduction of the argentine solution, in order to soften the mucosities which may have been coagulated, and to facilitate their ejection.

It is necessary to use the sponge whenever the canula or trachea seem to be impeded. The use of the sponge will be rendered more efficacious by the previous instillation of water. If the sound of a valve or a peculiar whistling which gives the idea of the presence of floating false membranes, be heard in the trachea, it is necessary to use the sponge probang repeatedly until the false membranes are detached and expelled. The employment of the probang is the more necessary in proportion as the symptoms following the operation are the more dangerous. "It never does injury, but is always followed by greater calmness of respiration, even in the last moments of life, and though the sponge bring away neither mucosities nor false membranes."

"With these methods of treatment, which are carefully employed by M. Bretonneau and myself, the success of the operation has not been brilliant; nevertheless, M. Bretonneau, in twenty operations, has saved six children; in one hundred and twelve I have saved twenty-seven. M. Leclerc, of Tours, who has adopted the same system, reports one success in two operations that he has performed. M. Velpeau, pupil, like myself, of M. Bretonneau, has cured two children out of ten. M. Petel, of Chateau-Cambrésis, who has pursued the same methods, has succeeded in three of six operations that he has performed. Thus, out of one hundred and fifty cases of tracheotomy, we count thirty-nine successes, or a little more than a fourth."

PHILADELPHIA, *Feb.* 1849.

Art. IV.—*Extracts from the Records of the Boston Society for Medical Improvement.* By Samuel Parkman, M. D., Secretary.

Nov. 13th. Hydrophobia.—Dr. Curtis of Lowell, read the following case: Mr. W. H. B., aged 18 years, very muscular and dark complexioned, of good health and excellent habits, while engaged as an auctioneer's clerk in Lowell, was bitten on the 29th of July last by a strange dog, which had been left by an Irishman for sale. The dog was attempting to escape when young Burdwell caught him, but on receiving a bite near the right wrist relinquished his hold, and the dog, making his escape, has not been heard of since. The wound, which was about three-quarters of an inch long on the inner side, and about a quarter on the other side, was dressed by a physician with common adhesive plaster and readily healed.

Some apprehensions that the animal might have been rabid were entertained by the bitten, but he pursued his business, and felt no unpleasantness except some mental anxiety, till Saturday, Nov. 4th, when his arm was somewhat painful. On the following day he took a bath instead of going to church, and at night bathed his arm in alcohol, describing the pain as rheumatic. On Monday he attended to his usual business with some uneasiness in his wounded arm.

On Tuesday, the day of the presidential election, he went to the store in the morning, but soon left to call on Dr. Graves for advice, to whom he related the facts, together with his suspicions that the pain might have some connection with the bite. A mild cathartic and a warm bath were advised and taken. About 4 P. M. he complained that the water tasted bad; by 4½, he was unable to swallow water. The most serious apprehensions were now entertained as to the awful nature of his disease, and its horrific results. The doctor was immediately summoned. He found the patient with an anxious expression of countenance, and labouring under a sense of suffocation, induced by an attempt to drink water. Some more water was offered him in a tumbler, at Dr. Graves's request, which brought on the most violent efforts, amounting almost to strangulation. No further doubts remained of the frightful reality of the malady.

At 7½ Drs. Dalton and Green were called in consultation. Dr. Dalton says he found the patient in bed; skin cool, not dry; pulse 120, and small; no headache; tongue covered with a slimy coat; stomach nauseated; mind clear; no throbbing in temporal or carotid arteries, or heat of scalp; action of heart somewhat sharp; answered all questions deliberately; cicatrix of the wound somewhat elevated and reddish, without soreness; skin around it not inflamed; some intermittent pain in arm, extending to shoulder and neck; cathartic had operated once. The bath, he said, was grateful to him, with no unpleasant effects; thirsty; had pain nowhere else than in the arm as above. On being asked if he would drink, he said he would try; he took the tumbler of water in his hand, and brought it to within half an inch of his lips, when his head was thrown back spasmodically, and his hand forwards; on attempting it again, with much effort, he got about a teaspoonful into his mouth, which, *as soon as it reached his throat*, was attended with the most violent convulsive catchings of the breath with a sort of sobbing sound, which brought into bold relief the sterno-mastoid and other muscles of the neck and throat, and soon he sunk back on his pillow, apparently much exhausted. Some milk was offered him in a tumbler, which he swallowed with visible exertion and deter-

mination; bread also he swallowed without difficulty; currents of air by fanning or otherwise, produced no apparent effect on him at this time. Chloroform was administered with its usual effects. Dr. Graves left him at midnight, without any abatement of the disease. On the morning of Wednesday, the 8th, every unpleasant symptom had increased. Convulsions were more frequent and more violent, but he seemed perfectly rational during the time between the paroxysms, and answered all questions with much composure; said he had no *pain*, but a sense of suffocation; was sensible of his situation, and of the terrible character of his disease; fully realized that inevitable death, in one of its most horrid forms, was before him; his countenance was wild and staring, without any distortion of features or swelling of face. The unfortunate patient had suffered extremely from thirst during the night. A viscid and very tenacious saliva would occasionally collect, the discharge of which required all the resolution and determination at his command, and then was attended with convulsions of the utmost vehemence. In one instance, having called for "something to spit on," I held the napkin near, but losing control of himself he spit on my hand, for which he apologized in the following interval of partial relief, showing that he was sensible, to some extent, during his convulsions. At 10 A. M. I noticed his pulse to be only 78. He was much exhausted, and almost every moment revealed changes which marked the great rapidity which characterized the progress of his disease. The sight of water, or hearing the name of any liquid mentioned, was most terrible to him; the sound of fluids in a neighbouring apartment produced also the same sad results. A current of air, or the breath of his attendants even, agitating the atmosphere near his exposed surface, would produce a like effect. He was averse to the use of chloroform, but at $11\frac{1}{4}$, his hands being gently guarded by Dr. Dalton and myself, he was induced to inhale from the sponge. By calm, rational and persevering appeals to him, it was continued till perfect anæsthesia was induced at about $11\frac{1}{2}$. I now found his pulse to be 86, and at $\frac{1}{4}$ P. M. it was 84.

He gradually recovered from the influence of the chloroform, which was not exhibited again till $4\frac{1}{2}$ o'clock.

Soon after 1 o'clock he was confined by tying a folded sheet around his body, and fastening it by strong straps to the bedstead on each side; thus he had no consciousness of being bound except in his struggles, which rapidly increased both in frequency and severity to a most frantic degree. About this time he was visited by the elder Dr. Bigelow, of Boston, in consultation with the several physicians who had been called in. The result was a confirmation of previous counsel, and a continued resolution to persist in the use of the chloroform.

At $4\frac{1}{2}$, during a brief interval of his paroxysms, he extended his arms and requested us to hold him and give him the chloroform, which was done forthwith amid the most violent opposing struggles, till complete effect was produced. In the absence of a supply of the anæsthetic agent a partial revival took place, accompanied by a continuous agonizing paroxysm; but the eight assistants maintained their grasp till a new supply arrived, which was used with complete success. His pulse was now ($5\frac{1}{4}$ P. M.) 160. I continued to apply the sponge at intervals of returning consciousness until $5\frac{3}{4}$, when it was suspended altogether. He had now sunk so low as to remain still. The consciousness of being hurried on towards life's terminus by so terrible a malady, with an impetuosity which admits of no check, together with the extreme nervous exhaustion induced by the disease itself, had combined to reduce the power of vitality already into a fatal quiescence. It was now 6

o'clock, the sputa had increased in quantity, and had become less slimy and far more frothy.

The patient lay quiet with stertorous breathing; laboured action of the heart; occasional strabismus, but eyes generally turned upwards and fixed, with other symptoms of cerebral congestion; countenance flushed and apparently tumescent; extremities gradually became cool, accompanied with excessive general perspiration. The discharge at the mouth also greatly increased, and became bloody. I should judge that during the three hours preceding death I wiped away f℥viij or f℥x, including perhaps f℥j or f℥jss of blood, as it escaped from his mouth. During his moribund state, it seemed to leave his lips without an effort in a small stream. He continued to sink till 7¾, when he ceased to breathe without a struggle.

Autopsy. Thursday, 2 P. M., 18 hours after death.

The body was dark and mottled; the cutaneous and subcutaneous capillaries apparently engorged with deoxygenated blood; extremities nearly black; depending surfaces also very dark; emphysema, which I noticed within two minutes after death, about the neck, had somewhat increased and extended over the thorax, and partly down the upper extremities. On my first incision blood flowed freely, and followed the scalpel; no coagula in the system. I first exposed the spinal cord; it was considerably injected and emphysematous beneath its arachnoid investment. The brain was highly injected throughout, and bubbles of air were distinctly seen in its veins. The brain was of its natural consistency, and its ventricles contained their usual amount of normal fluid. The cut surfaces of the cerebral mass exhibited numerous points of red blood oozing from its substance, which was the only *red* blood found anywhere.

The trachea and bronchia were highly inflamed, and their mucous linings presented a purple coloured or violet aspect. The epiglottis was very large.

As the body was to be removed in the next train of cars, the examination was necessarily terminated.

Dec. 11*th. Rupture of the Femoral Artery.*—Dr. S. Parkman exhibited the artery, torn at the point of its passage through the adductor magnus tendon; a cart loaded with coal had passed over the lower third of the thigh; there was no external wound or abrasion of the skin; but the sudden ecchymosis, and the cessation of pulsation below the knee rendered the nature of the accident perfectly clear. The integuments were rendered very tense by the effusion of blood through the whole thigh. The limb was amputated above the injury. Besides the artery, the gracilis, sartorius and semi tendinosus muscles were completely ruptured, and the effusion of blood very considerable. The bone was uninjured.

Jan. 7*th*, 1849. *Malformation of the Heart.*—Dr. Jackson presented the specimen, in which there was seen a free communication between the two ventricles at the upper part of the septum; the right ventricle was much thickened, as usual in these cases, the left being rather thin; the pulmonary artery, also, which appeared small externally, arose somewhat indirectly from the ventricle, and had but two valves, which differed much in size, but were otherwise normal; the aorta was enlarged, and the valves well developed;

the heart, lungs and liver were crowded with blood, which was very dark and thick, but without coagula. The patient was a mulatto child, four years old; almost from birth it had been subject to dyspnœa, with lividity, and frequent paroxysms of severe distress, so that malformation had always been supposed to exist; the action of the heart was regular, and attended with a loud bellows-sound.

Disease of the Heart.—Dr. J. also presented another specimen, the case being interesting from the fact of there having never been observed any irregularity or intermission in the action of the heart, notwithstanding the existence of very great valvular disease; the mitral and the aortal valves were about equally affected, ossified, thickened, rigid, and contracted, the aortal orifice being permanently open. In the mitral valves there was a small cavity, connected with the cretaceous deposit, and apparently the result of caries, though there was no ulceration about it, this appearance having already been several times noticed here in similar cases; the right side of the heart was healthy, except for atrophy and perforation of the pulmonary valves, which is here quite common; the left ventricle was much hypertrophied, and the whole organ weighed 21 ounces. The patient was a largely developed man, 43 years of age, and a carpenter by trade; had suffered from his disease for four or five years, but had worked until the last six months. Distress in the region of the heart was the chief symptom, and for the last two months he was unable to lie down in bed.

Polypus and Inversion of the Uterus—Ligature—Excision of a Large Portion of the Uterus—Recovery.—January 7th, 1849.—Dr. W. W. Morland read the following case, with an account of the operation, from Dr. A. L. Peirson, of Salem, Mass.

In June last (1848) a medical friend called my attention to the case of an Irish female under his care, 24 years of age, unmarried. She had been a domestic in a family, where he had first been called to her in October, 1847. She then had poor health, so that she was obliged to give up her duties as housemaid: she had uterine hemorrhage from time to time, under which she gradually lost strength. Her statement was that she had enjoyed good health until July 5th, 1847, when she had severe pain in the hypogastric region, rigors and menorrhagia, which last was attended with relief. In a fortnight from this she had recurrence of the same symptoms,—pain, rigors, hemorrhage with coagula. These attacks were repeated at intervals of two weeks, until October, 1847, after which time she was visited by the medical gentleman, at whose desire I saw her, until March, 1848. At this time she had a watery discharge most disgustingly fetid. An examination, made by her medical attendant at this time, discovered a tumour, apparently the uterus in an ulcerated state, low down in the vagina. Her health was not entirely broken up at this time,—she had some strength and appetite, so she did not give up attempts to live at service, till about the time she was first seen by me in June, 1847. She was then confined to her bed for the most of the time, very weak, and having a profuse, watery most offensive profluvium. The feet were much swollen. The prognosis given at our consultation was against her recovery. Injection of a weak solution of soda had a most happy effect in destroying the fetor and in lessening the discharge,—and by the use

of tonics her health was much improved. About the middle of July her medical attendant made an examination, at which he discovered a polypus, which induced him again to call me in consultation, to attempt means for her relief, which now seemed practicable. I found the polypus filling up the lower part of the vagina, and having a pedicle rather less than an inch in diameter. It was agreed to apply a ligature to this pedicle: this was executed with considerable difficulty by means of Gooch's double canula. There was no pain of consequence upon tightening the ligature; but, after two days abdominal pain and tenderness occurred, with vomiting, requiring the removal of the ligature on the sixth day after its application. In less than a week the dangerous symptoms produced by the ligature subsided, after which it was decided to remove the polypus by excision. The operation was performed in the following manner: the tumour, by means of the forefinger introduced into the rectum, was with difficulty forced without the external organs, and the patient being *then* placed under the influence of chloroform, a pair of strong scissors, curved laterally, were introduced into the vagina, and what seemed to be the pedicle of the polypus was divided at a distance of about two inches. After the removal of the polypus, the os tincæ was felt, natural, but somewhat dilated. On examining the tumour, the polypus was found to be perfectly *sessile*—as the botanists say—and what was esteemed the *pedicle* was the *inverted uterus*. The patient was kept very still in bed for a few days on a low diet, without any movement of the alimentary canal. Her pulse never rose to 100 per minute, and she had hardly a perceptible tenderness in the hypogastric region, and no constitutional disturbance whatever. In a short time she perfectly recovered, and is now at service, in robust health, doing the ordinary duties of a domestic. She has not menstruated since the operation, nor has she felt any disturbance of the system indicative of a menstruous period. Her first attack of pain and menorrhagia was probably the time when the inversion occurred.

There are many cases of successful extirpation of the womb to be found in the volumes of periodical medical literature. Mr. John Hunter applied a ligature to the inverted uterus, mistaking it for polypus. He was led into the error by founding his diagnosis upon the supposed sensibility of the uterus, and the absence of such sensibility in polypus. This is fallacious, and the expression of suffering varies according to the moral courage of the patient. Dr. Charles Johnson, in a case in which Dr. Joseph Clark, of Dublin, was consulted, did the same thing, and persevered in the use of the ligature till the fundus of the uterus came away. The woman did well, and was reported by her mother *to have menstruated* some months afterwards. (*Dublin Hospital Reports*, vol. iii. p. 479.) Dr. Joseph Clark applied a ligature to an inverted womb, which he and a surgeon of eminence judged to be a polypus, and after a fortnight's trial, during which the woman suffered much from pain, vomiting and watchfulness, he removed the ligature in despair of success. Some time afterwards, "when, in consequence of some extraordinary effort, a tumour shot suddenly out at the os externum," he proceeded to amputate the part. The woman recovered rapidly and perfectly. She never menstruated afterwards. (*Edinburgh Medical and Surgical Journal*, vol. ii. 1st series.) The editor has appended to this case a quotation from Voigtel,

referring to many such cases. Dr. Robert Lee, in the 1st volume, 2d series of the *Medico-Chirurgical Transactions*, gives some interesting views in regard to tumours growing from the interior of the uterus. He thinks that the greater number of uterine polypi are fibrous tumours, which have been formed under the lining membrane, and a stratum of muscular tissue. To this circumstance he attributes the death of a patient in the Marylebone Infirmary in 1833, where the neck of the tumour was tied, with very little pain. Dr. Lee mentions a case of Dr. William Hunter's where death ensued, —a portion of the uterus having been included in the ligature. Dr. Denman, quoted by Dr. Lee, also passed a ligature over the inverted part of the uterus, in a young lady, which caused violent and dangerous symptoms. The patient ultimately died. From all the facts I can gather upon the subject of uterine polypi, I should be inclined to adopt Dr. Lee's rules.

1st. When any of these tumours pass through the os uteri they may be removed by the ligature or the knife. Dupuytren's great experience is that, in two hundred removals of polypi by excision, he has met with hemorrhage only twice, and then it was entirely controlled by the tampon.

2d. That the ligature, which is demanded in those having a large and vascular root, need not be applied very near to the uterus,—as is generally directed,—but at a sufficient distance to avoid the possibility of including any portion of it. The pedicle of a polypus HAS NEVER BEEN KNOWN TO REPRODUCE THE TUMOUR.

In addition to the above remarks by Dr. Peirson, Dr. Morland said that the opinions of Dr. Lee are advocated by Churchill in his work upon the "Diseases of Females." Particular reference is here made to the fact that, most frequently, polypi of the uterus are *fibrous* in their nature. Churchill states that this tumour is sometimes united with the uterus by cellular tissue; but, much more frequently, it has originally been somewhat imbedded in the muscular fibres. In some few cases these tumours have been found hollow, either empty or containing grumous blood, or gelatinous matter and hair, or fat with hair. (Boivin and Dugés, Langstaff—*Medico-Chirurgical Transactions*, vol. xvii. p. 63.) Churchill likewise remarks as follows in regard to the excessive hemorrhage usually accompanying polypus uteri. "It is exceedingly difficult to explain, on pathological principles, the occurrence of the alarming hemorrhages which accompany polypus uteri; it is impossible to attribute their source to the vessels of the polypus, since the existence of such can seldom be ascertained; and besides, the floodings are as severe from small as from large polypi." Dr. Hamilton explains this by the increased determination of blood to the uterine vessels, in order to support the growth of the polypus. Of this fact, he adds, "there is perfect evidence, for the uterus keeps pace in increase of size with that of the tumour." He infers from this "that a very slight circumstance must produce a discharge from the uterine vessels, such is their texture." "Polypi are not common in middle age, but are equally frequent in single and married females." According to

a table given by Malgaigne, quoted by Churchill, the middle age of life is that in which they most often occur. Out of 51 cases 36 occurred in women from 30 to 50 years of age. Polypus, with inversion of the uterus, has been often recorded. "Denman, Heaviside, and Hamilton, of Glasgow," says Churchill, "relate such cases, and I was permitted, through the kindness of Mr. Lynch, to examine one under his care at the Jervis-Street Hospital. The uterus is first distended by the *bulk* of the polypus, and then inverted by its *weight*, and the forcing downward, in the efforts of the uterus to expel its contents." Removal of the polypus is decidedly advised by all authors so soon as it is practicable. The modus operandi, and the instruments employed, vary with different operators. Ligature seems to have the preference. Many substances have been employed for this purpose, waxed silk, silver wire, catgut, silk wrapped around with fine wire, whip-cord. The latter is recommended by Mr. D. H. Walne, who having observed, that when moistened, it increases in thickness, remarks that it will instead of becoming looser around the pedicle, *tighten* itself considerably. (Churchill, *Op. cit.*) Dr. Blundell recommends Hunter's polypus needle in applying the ligature. Levret's double canula, of which instrument that of Dr. Gooch is a modification, is most often used. Patients nearly always recover well after the removal of polypi; Hamilton reports the death of three patients after it. Dr. Blundell speaks of a case where excision was practiced immediately after the ligature was tied; the polypus was complicated with inversion; (as in the case forming the subject of this paper,) the patient died from loss of blood by oozing from the surface of the portion of the uterus excised. In the case above given by Dr. Peirson, the ligature having been on for six days, doubtless prevented any bleeding when excision was finally practiced by its constriction of the vessels, and their obstruction, for some distance, by coagula. Dr. Blundell advises the application of the ligature in cases of polypus complicated with inversio uteri, in such a manner "as to take away both the polypus and the uterus together at once." (*Principles and Practice of Obstetric Medicine, etc.* London, 1840, p. 803.)

Dewees relates a case where there was apparent reproduction of the tumour, and he says, "Of this repullulation, if it were such, I have never seen any other instance, so early after the operation." He supposes it might be owing to a great thickness of the stem (the ligature was on for nine days before the tumour first detected came away), to its slow decay, to a cancerous disposition of the uterus, or to a large portion of the polypus remaining in the uterus, besides what was discoverable in the vagina. (*Dewees on Diseases of Females.*) The latter seems the more probable explanation, as authors state the fact, worthy of notice, that the stem of a polypus, "instead of being prolonged into fresh polypus, invariably sloughs away." (*Churchill, Op. cit. Blundell, ditto.*)

The parts removed in the present case show the polypus, which is nearly circular, flattened anteriorly, and attached *almost directly* to the fundus uteri,

so that it cannot be said to have any *pedicle*, although the impression left by the ligature is distinctly visible around its *origin*. It is, as the operator remarks, "*sessile*,"—about two inches of the uterus are removed,—both the Fallopian tubes are seen,—and, upon the *now* external surface (which is, of course, properly, the internal), one of the orifices of these tubes is very distinctly visible. The external surface of the tumour is somewhat roughened—probably from the effect of ulceration. The specimen is deposited in the Cabinet of the Society.

Enormous Encephaloid Tumour in a child only five years of age. Dr. GOULD.—The subject of this disease received a blow in the abdomen about five months before death, and was first seen about three months after. The abdomen was enormously swollen, but the child was bright and active. There were no peculiar symptoms, but the child gradually sunk and died. On dissection, a mass of disease was found, about as large as the child's head, consisting of a very soft white encephaloid substance, with some effused blood, and a considerable quantity of a glairy fluid, that soon formed a soft tremulous coagulum after removal from the body, as does the serum in some forms of dropsy. The deposit was in the cellular tissue behind the peritoneum, at the upper part of the abdomen, and tending down the left side, and inferiorly across to the cœcum. The colon was pretty closely connected with the mass, and the pancreas was raised by it and brought forward conspicuously into the front part of the abdomen. The left kidney was extensively involved in the disease, and its vein contained a large mass of soft encephaloid substance. The other organs of the abdomen were healthy, as was also the peritoneum. In each of the lungs were several encephaloid masses, from four to eight lines in diameter, and in the left pleural cavity some serous effusion.

January 22. *Cases of Etherization in Childbirth.*—Dr. Channing read a paper, as follows.

These cases are communicated to the Society as affording additional evidence to that contained in a volume recently published in this city, of the safety and usefulness of etherization in childbirth. One case only of convulsions is given. Others of great interest, in which etherization was signally useful, will be communicated at another meeting. In this and other ways I shall endeavour to keep before the public and the profession, such facts as fall under my notice, or which are communicated to me, which may serve to illustrate a subject of the deepest and widest interest.

Natural Labour.—Mrs. ——, aged 25. Second labour. Health perfect. I have rarely if ever met with the appearance or the fact of such entire absence of disease, and of the absolute want of anything having its likeness. The whole pregnancy was marked by freedom from annoyance, discomfort, or trouble of any kind. The natural, habitual buoyancy, fulness of spirit, enjoyment of everything, prevailed through the whole period of the nine months, which so frequently are passed in more or less discomfort, and so often by more or less positive disease.

Her first labour, two and a half years ago, was immediately preceded by convulsions. The disease had its severest characters, and when it had continued unabated for many hours under very judicious treatment, I was desired to see the case in consultation, with a view to terminate it with instruments. This was done. But the convulsions continued. After a time they ceased, but consciousness did not return. The patient remained for a week in a most critical situation, passing much of the time in groans and screams as if in great agony. Convalescence at length began, and her ordinarily excellent health was gradually restored.

The present labour began Oct. 15th, P. M. I was called to see her about 3, A. M. of the 16th. She was in active, natural labour, the presentation good, and progress satisfactory. She soon demanded ether, which she had before determined to use. The vapour was inhaled from a hollow sponge in the usual manner, and was followed by its happiest effects.

The child, a boy weighing nine pounds, was born during almost perfect unconsciousness, and without the least untoward results. The bowels were perfectly regular, and, without any medicine whatever, lactation was most kindly established, natural appetite for food continued undisturbed, sleep was tranquil, and after-pains kindly referred to.

I present this case to the Society because of the evidence it affords of the entire safety and advantage of etherization in labour, and in the puerperal state. I do so because we are often asked if it be proposed to employ it in common natural labour, why not do so? Why not prevent great suffering, it may be, and make convalescence more rapid and more sure, than to take the chances of protracted suffering, and of slow recovery. This is not a solitary case of the employment of etherization in the most natural labours. It is enough, however, to furnish this additional evidence of its safety in such cases to the large amount of the like contained in the treatise above referred to, and which a wider later experience abundantly confirms.

Natural Labour.—Age 34. 9th labour. Jan. 16, 1849. Labour begun at about 3 A. M. I was called about 6 A. M. Contractions strong. Os uteri dilatable. Head presenting. Membranes not at all separated from scalp by water. Posterior fontanelle to right acetabulum. At 9, os uteri had disappeared. Liquor amnii discharged. External organs moderately dilatable. No *show*. The only moisture was produced by the slight trickling of liquor amnii over the organs. At 9 she inhaled ether vapour. Its good agency was soon seen. Pain was so much diminished as scarcely to be complained of. Pressure to the back was no longer clamoured for. An abundant *show* appeared. It was of dense and *coloured* mucus. I underscore the word *coloured*, as I well remember Dr. John Clarke's remark on this occurrence. He ascribes it to the rapidity and fulness of secretion,—to the rapid dilatation of organs,—and especially looks to it as the best evidence of the most favourable pregnancy case. In this instance the increased dilatability was most observable in the vagina and external organs. Labour advanced rapidly and kindly. The posterior fontanelle was forced towards the symphysis. The sagittal suture in the direction so well described by Neagle. The child was born in about an hour and a half from beginning etherization. A male, weighing 11 pounds and 12 ounces, in perfect health. The placenta soon followed, and without hemorrhage.

17*th*. Perfectly comfortable. No after-pains, which, in other labours, had

been remarkable for their severity. Urine natural. Bowels regular without medicine. Child at breast.

This case is presented to the Society because of the occurrence of full secretion, *show*, and of the free dilatability which occurred along with etherization in textures which before had undergone very slight change. It is farther offered because it has been gravely questioned if such changes do occur from etherization, or during that state, and if they do, whether they should be referred to that. The coincidences have been too numerous to leave this any longer a question.

Convulsions.—Age twenty-two. First labour, December 17th. A fortnight ago having been looking for labour some weeks, was seized with convulsions. Her physician reached her about an hour after the attack. She was then in a comatose state,—her breathing stertorous—pulse very rapid, and small—blood coming from nose and mouth—skin generally pale. While the examination was proceeding, another fit occurred. As soon as it could be done the patient was raised up in bed, and supported in that position. A vein opened, and thirty-two ounces, two pints, of blood taken. This was followed by perfect calm, and there was no fit afterwards. The patient soon rallied, so that in three or four days she was abroad, and walked from her house to South Boston, a quarter of a mile or more. In other words, she was quite well.

A week after her recovery her physician called to see her again. He found her complaining of most severe headache; referred to top and front of head, and almost immediately she said, "I can't see you—what is the matter?" He bound up her arm at once, and bled her again to full two pints. There was no convulsion.

On the 17th, Sunday, between eight and nine, A. M., he was called, as the membranes had broken, and the liquor amnii had freely escaped. He reached the address soon after, and in time to witness the faint fit which ushered in the labour. This was very severe; so that notwithstanding the former bleedings, and the pale skin, and very small and weak pulse, he thought it safer to bleed again, especially as such good effects had followed the former bleedings. He now took a pint. Examination showed labour was present. Convulsions continued to recur about once an hour through the day, the labour slowly advancing. At length, in the evening, progress had nearly or quite ceased; and the convulsions continuing, he desired me to meet him in consultation.

I found the patient exceedingly restless—very pale, lips as well as face—skin cool, almost cold—pulse very small and feeble, about 140 in the minute. During pain, restlessness especially great. In intervals she lay most of time in heavy sleep. Examined and found head low; at the bony outlet partly covered with os uteri—os being partially dilatable, being very firm where dilatability ceased. Much dryness, there being no proper show, the moisture mainly depending on liquor amnii, which slowly was passed away. I was told that the urine had been passed in the forenoon.

The question of chloroform arose. The physician in attendance had used it in other labours, but never for convulsions. I stated my observation of its effects—that I had within a year or two employed etherization in ten cases, and that six of the patients had done well; and that in the present case it seemed especially deserving of trial, seeing that bleeding had been thoroughly tried, and that the convulsions continue to recur, and without any promise of spontaneous abatement. It was agreed to employ chloroform; and as the

time of an expected fit had nearly arrived, it was determined to use it at once. Some progress had apparently been made within an hour or two; but her whole state showed that she could not probably survive if her present state was not soon replaced by delivery.

A handkerchief was wetted with about half a drachm of chloroform, and applied to her nose and mouth. She very soon inhaled regularly and thoroughly. A pain came on. It was strong, and of fair length. She did not move in the least, but you felt by her respiration—her obviously involuntary bearing down that the pain was efficient. The physician said that this was the case—that the head was pressing down, and the os uteri disappearing. A good interval occurred, and immediately, as pain returned, inhalation was again practiced. Progress was now reported as rapid. Another interval, and another pain of the character first described. I now examined, and found the labia well opened—the head just within them—the os uteri gone, and a sufficient mucous show. I called the attention of the physician to these points. He was a competent witness, and for hours had been in faithful attendance on the patient. He agreed entirely with me as to the facts now stated. In a few more pains the child was born. The cord was twined firmly round its neck. There was no pulse in it. The child was soon relieved of the presence of the cord, and was then easily born. There was no respiration—no movement of the heart, and the whole appearance was of death, which probably occurred some time before its birth. The womb contracted well. The placenta was expelled. I asked if there were any hemorrhage, and found there was none. The hand of the physician which was employed in receiving the after-birth, was not even soiled with blood. A binder was applied. The course settled as to what should be done in the night, especially if convulsions recurred, and I left the patient perfectly comfortable in about an hour and a half after reaching the address.

18*th*, 9 A. M. I found the patient very comfortable—pulse 100, of good strength; skin warm—in sound sleep. I learned that in about an hour after my leaving the patient she was seized with a convulsion. Chloroform was at once used, and the fit was not as long nor as severe as had been others—that there had been frequent threatenings of fits, by a convulsive twitching, or *drawing* of the head to one side, with rapid motion of the eyelids—the precursor of former convulsions. As soon as these signs manifested themselves, chloroform was inhaled, and not another fit occurred. No urine. Catheter.

19*th*, 9 A. M.—Patient very comfortable. Wide awake; colour of cheeks good; pulse 96; warmth sufficient. Asked how she felt; "First rate," was the quiet answer. One dejection yesterday without medicine. Physician reported that he had for a time utterly failed to introduce the catheter. The violence of the patient made it impossible for him to do it. He placed her under the fullest power of chloroform. Perfect etherization was established, and the catheter introduced with entire ease. About a quart of urine was drawn off, and showed to me. It had no appearance of urine, but rather resembled turbid black tea into which much milk had been poured. It having been drawn into a large white bowl, the resemblance was the more noticeable. It was entirely without smell, and in this respect it corresponded exactly with urine drawn during a case of convulsions of great interest, which I saw some months since with Dr. Wyman, of Cambridge. The colour of the urine in Dr. W.'s case was darker than in the above, but the liquid had likeness to urine. A test tube was filled with it, and boiled; coagulation occurred at once, and of a heavy dense character. Another portion was tested with nitric acid. It was at once, and almost the whole of it, firmly coagulated.

I have not met with any instance in any disease in which the urine has been so remarkably coagulated as in this.

This case furnishes strong corroborative testimony in support of the observations made on the urine in puerperal convulsions, by Professor Simpson, of Edinburgh.

I am indebted to my friend, Dr. Bacon, one of our best analytic chemists, for the following note of some experiments made by him on some of the urine above referred to.

Boston, January 13th, 1849.

Dear Sir:—I have made a partial analysis of the specimen of urine which you desired me to examine, but regret to find that it is so far decomposed that no reliable conclusion can be drawn as to its character when recent. I was able, however, to ascertain that there is no deficiency of urea, the analysis yielding 1·15 per cent., an amount but little below the average. It is probable that a part of the urea originally present has been destroyed by decomposition.

A considerable quantity of uric acid occurs in combination with ammonia. The white sediment, which when diffused through the urine gives it a milky and turbid appearance, is principally urate of ammonia. The most remarkable peculiarity of the specimen is the large amount of albumen which it contains.

Yours truly,

JOHN BACON, Jr.

Walter Channing, M.D.

Inverted Womb.—Age 22. 1st child. Labour took place evening of January 1st, 1849, and was completed between 8 and 9 A. M. This person is small, of feeble aspect, pale, but was very easily delivered of a large living child, a female. The pelvis was large, and well formed. The placenta soon followed the child, very moderate traction being used by the cord. The physician was struck by the mass, and by the suffering which attended and followed its expulsion. Upon examination he found the womb was inverted, the placenta being still attached to it. He used chloroform to facilitate the reduction of the womb, having first removed from it the placenta. The womb was readily carried into the vagina, and there resisted further attempts to return it to its natural situation. There was much hemorrhage.

I was desired to see this patient, and learned these facts in the case. Her attendant removed his hand from the vagina, and requested me to make an examination. I found a large and solid conical tumour, at the upper part of the vagina, extending some distance above the brim of the pelvis, and surrounded by a sac, which it nearly filled, allowing the hand to pass between them, the upper termination of which the ends of the fingers did not reach, and the lower edge of which was not so distinctly separated from the vagina as to make it perfectly clear where this last ended. The vagina was filled with coagula, and blood was freely oozing from the surface of the tumour. Having the tumour encircled by my hand as far as its size permitted, I directed chloroform to be given to diminish or suspend sensibility when pressure should be made upon the mass. It was strongly demanded by the patient. When etherization was produced, and it was very satisfactorily done, the tumour was firmly compressed. If any doubt had existed of the diagnosis, it was soon entirely removed by the gradual but certain diminution in the bulk of the mass, and by its slow return within that which contained it. It ascended gradually, until by a sudden bound it escaped from the hand. Contraction took place very soon. First in the upper part of the womb, and then in the lower part, the neck and mouth,—the latter closing accurately upon the fingers as they were withdrawn, or were protruded into

the vagina by it. A considerable portion of the membranes which were left attached to the womb after the placenta had been pulled off were partly expelled into the vagina, and partly remained in the womb. They were now carefully, and apparently wholly removed. Hemorrhage at once ceased. The womb was full in its usual place immediately after delivery. The patient seemed to suffer nothing from the operation.

4*th*. Report favourable.

10*th*. Recovery perfect.

This is the second case only which I have met with of recent inversio uteri. I have seen one only of the chronic form of this gravest of uterine displacements. The first case was not seen by me till two or three hours after its occurrence. I was called because of the extreme distress and death-like sinking, and hemorrhage which occurred, or increased after the supposed entire reduction of the displaced organ. I found the patient in apparently extreme danger. The symptoms were great restlessness, extreme distress, pale and cold skin, and scarcely perceptible pulse. I examined the abdomen, and found it presenting a hollow, rather than a fulness, in the place of the contracted womb, as ordinarily exists after delivery. A firm ring was felt extending from ilium to ilium, and permitting the hand to pass downwards as into the cavity of the pelvis, or a large empty bowl. Slight pressure on this ring, or rounded edge, produced severe pain. I said to the medical attendant that the womb was still inverted. He said it was impossible that this should be the case, as he had reduced it, but consented that I should examine the case. This the patient resisted. She said she had already suffered terribly and would not submit to be tortured any more. She was told of her danger, and assurances given that as little suffering as possible should be produced. At length she consented. I found, as I knew before was the case, that the womb was inverted,—passed the hand at once into the vagina, and with the backs of the fingers pressing upon the presenting fundus, steadily carried it into its place. Contraction at once occurred,—the hand was slowly expelled, and the woman at once expressed how great was her relief.

In comparing these two cases I cannot but notice the striking differences which characterize them. How painful was this last in its whole history! In the first case there was no suffering at all. There was the slightest degree only of constitutional disturbance, and local symptoms hardly existed. There was neither organic nor voluntary resistance to reduction, and from first to last the operation was progressive and satisfactory. It is a new application of etherization, and corresponds with the happiest,—the most successful.

Placenta Previa.—About 30. Fourth pregnancy. 8th month. Jan. 13, 1849, was desired to see her in consultation. Found that she had been flowing at times for three months. Last three weeks great loss. Labour occurred in night preceding my visit. I found her very pale,—perfectly blanched,—no pulse,—respiration sighing,—no uterine contractions. Her medical attendant was absent. Stimulants were given and the pulse returned, very feeble. Examined,—dilatation of external organs, and os uteri good. No hemorrhage. Coagula black, shreddy, firm. It was my purpose to have

turned before such reaction had occurred as would or might be attended with hemorrhage, as it seemed pretty clear that further loss would be fatal. Circumstances prevented my doing an operation which I could not control. I left,—came back in an hour,—found the physician in attendance, and it was agreed that turning should be done.

The hand passed easily into the vagina, and etherization by chloroform was established. Os uteri was now passed. The placenta was found to be extensively separated, and remaining adhesions were separated. The hand now was passed between the womb and membranes, till a knee was felt within the latter. They were broken, and the liquor amnii scarcely at all escaping, the limb was readily grasped, and slowly but easily brought down. Delivery was accomplished without the patient being at all conscious of the event. The placenta followed. *There was no further hemorrhage.* A swathe was applied, and the woman left after an hour perfectly comfortable. The ease of the operation has been spoken of. This was wholly owing to etherization. There was not the least resistance to the operation. The patient was in perfect sleep. No excessive action of the womb occurred. How important are these facts in this history. How deeply should they be considered by the enemies of etherization. This woman must have died under any farther hemorrhage. What more likely to produce this than struggles to escape from the pains of turning? Her strength was almost exhausted. What surer to take away that little which remained than resistance and struggle? What more perfect than the operation, both in itself, the quiet during which it was done, and in its results?

14*th.* Fair reaction.

15*th.* Doing well. Milk in breasts. Pulse of sufficient strength. Not the least abdominal tenderness. Renal excretion natural. Good colour in lips. Sleep disturbed by moral excitement, and by visitors. On the whole very comfortable.

ART. V.—*Report of the Cases of Small-Pox received into the Philadelphia City Hospital in* 1845–6. By F. W. SARGENT, M. D., then Physician to the Institution.

IN January, 1843, Dr. Thomas Stewardson published in this Journal, a paper entitled, "Remarks upon the cases of Small-pox admitted into the City Hospital during the years 1840, 41, and 42."

In August, 1842, the hospital was closed;—the epidemic having so far subsided, as to render, in the estimation of the Board of Health, the continued maintenance of a small-pox hospital unnecessary. The disease, however, did not entirely disappear from amongst us. The degree of its prevalence we have now no means of ascertaining,—the returns of cases of the malady in question, made to the Health Officer, as required by law, at the time of their occurrence, not having been preserved.* But the record kept at the Health

* We are glad to learn that it is the intention of the Health Officer to preserve on record all the reports of cases of small pox which shall hereafter be made to him. And as

Office of the *mortality* at different periods, shows the following result with regard to small-pox, from the time of the closure of the hospital, in 1842, to its reopening in November, 1845:—

	1842.	1843.	1844.	1845.
Jan.	—	8	2	2
Feb.	—	5	1	2
March	—	6	4	3
April	—	5	1	6
May	—	2	4	12
June	—	2	2	6
July	—	1	1	5
August	2	0	1	5
Sept.	5	1	1	4
Oct.	1	1	0	24
Nov.	1	1	0	
Dec.	10	2	2	
	19	34	19	69

From this table it will be seen that the disease was pretty steadily on the increase from the commencement of the year 1845, so that the Board of Health determined to reopen the City Hospital in November of the same year, for the reception of those small-pox patients whom it was considered advisable to send to a public institution. I was appointed physician to the establishment.

The following report is founded upon the cases admitted into the hospital from Nov. 1845, to August 1846, when the institution was again closed. The facts stated, were observed by myself at the bed-side of the patients, and recorded at the time, or, when reference is made to the condition and history of individuals prior to their admission, acquired as carefully as possible from their friends and from themselves.

The City Hospital was the only public institution at which small-pox patients were received, and from this no applicant was excluded. Consequently, the position, character, and habits of the patients varied very much; generally, however, they were of the poorer classes, whose daily labour earned a support for themselves and families, and who in severe sickness, were compelled to seek in a hospital, the comforts and professional aid which poverty denied them at their own homes.

The whole number of patients admitted was 294; of these 287 had variolous disease; 1 had measles; 1 rheumatism; 1 impetigo; and the remainder had merely some trifling indisposition, which speedily passed away.

Of the 287 to whom alone this report refers, there were of

this register will be the only one which will enable the profession to ascertain the degree of prevalence of the disease at any time, it is very desirable for purposes of future reference, that all physicians shall duly report their cases.

Whites—Males, 120
Females, 46—Total 166

Blacks—Males, 68
Females, 53—Total 121

There were admitted in

1845.		1846.						
Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.
15	55	76	49	58	18	11	3	1—287

The ages of 285 were thus recorded:—

Under 1 year.	From 1 to 7.	7 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	above 50.
6	14	21	71	117	41	11	4

Great care was taken to ascertain the duration of the eruptive fever. This was very variously stated in different cases, and perhaps erroneously stated oftentimes. The same difficulty, however, will be met with in hospital patients generally, and particularly when they are of the class from which most of those were drawn who furnished the materials for these remarks. The statement, therefore, will not be destitute of value. In those cases in which the information could be obtained with satisfactory precision, the eruption appeared on the days indicated in the following table, and with the frequency noted:—

1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	Total.
1	31	82	66	28	3	211

In two individuals there seems to have been no premonitory fever; they declared, on the contrary, that they were not obliged to discontinue their customary work, and that they were not conscious of being at all unwell, until the eruption appeared. It happened, too, in several instances that the patients experienced a precursory sickness of ten or twelve days, but this prolongation of the eruptive fever, as it at first seemed, was attributable to causes independent, apparently, of the variolous poison, as to catarrh and rheumatism.

The premonitory symptoms varied very much in severity, and generally their intensity bore a direct ratio to the severity of the disease which they ushered in; this was not so frequently the case in patients who had been vaccinated, as in the unprotected; indeed, the former suffered severely oftentimes, during the initiatory stage, while the subsequent symptoms were quite mild. The most common attendants of the premonitory fever, were pain in the lumbar region, headache, and vomiting,—the latter, however, was by no means a constant symptom; the fever was in very many instances preceded by a chill.

In thirty-six cases in which the eruption was observable from its first evolu-

tion, I could distinctly see a central point upon the papula as early as the second day of its appearance, before it assumed the vesicular form. This fact, if it shall be further substantiated, will materially assist in the early recognition of small-pox; and it is important to possess some more certain data of diagnosis from measles than those which are usually indicated as being sufficient to distinguish the two affections at their commencement, viz: the duration of the eruptive fever, and the presence or absence of catarrhal symptoms; for the papules of small-pox do not appear with, by any means, invariable regularity on the third day of the sickness, and when they are thrown out, the mucous membranes of the respiratory organs and of the nose and eye are involved as well as the skin. This central point is not always observable, however, at so early a period as that spoken of; I frequently sought for it in vain in cases similar apparently to others in which it was recognizable.

The date of the commencement of the scabbing process was noted in every case in which it could be determined; sometimes it could not be ascertained in consequence of an uncertainty as to the date of the commencement of the disease; and in other instances, the patients died before the maturation of the eruption. In all cases, the time at which the papules appeared was taken as the date from which to reckon the completion of the maturative process. Desiccation commenced on the days indicated in the following table with the frequency assigned to each.

4th day.	5th day.	6th day.	7th day.	8th day.	9th day.	10th day.	11th day.	Total.
1	6	35	37	66	12	3	2	162

The complications were numerous; some directly and of themselves endangering life; others materially adding to the severity of the original disease, or rendering convalescence more slow. The skin, the mucous and serous membranes, the liver, the heart, the lungs, the brain, the eye, were all implicated with varying severity and frequency. The accompanying table will exhibit the complications which were noted, together with the period at which the most important of them appeared, counting from the date of the eruption. Some of them, it will be observed, were of a chronic character, originating before the small-pox, yet modifying its course, probably; most of them, however, were engrafted upon the latter. In several instances, the same individual suffered from two or more of these intercurrent affections. The milder complications are only enumerated when they required especial attention.

Abscess of cell. tissue.	Boils.	Conjunctivitis.	Infantile convulsions.	Epileptic convulsions.	External Erysipelas.	Gastro-Enteritis.
2d week, 5 cases.	2d week, 6 cases.	1st week, 2 cases.	Before erup. 1 case.		1st week, 3 cases.	1st week, 1 case.
3d week, 2 cases.	3d week, 18 cases.	2d week, 4 cases.	1st week, 2 cases.		2d week, 22 cases.	2d week, 2 cases.
	4th week, 17 cases.	3d week, 1 case.	2d week, 2 cases.		3d week and subseq. 22 cases.	3d and subseq. 2 cases.
Total 7	Total 41	Total 7	Total 5	Total 2	Total 47	Total 5

Hemorrhages from mucous surfaces.	Hepatitis.	Iritis from ulcer of cornea.	Acute Laryngitis.	Mania-a-potu.	Subacute Meningitis.	Miscarriages.
1st week, 10 cases.	2d week, 3 cases.	2d week, 1 case.	1st week, 10 cases.	4 cases.	2 cases.	Before eruption, 1 case.
2d week, 3 cases.			2d week, 2 cases.			2d week, 2 cases.
Total 13	Total 3	Total 1	Total 12	Total 4	Total 2	Total 3

Peri-Endo-carditis.	Peritonitis.	Pleurisy.	Inflam. of Joints.	Diarrhœa.	Laryngeal and pulmonary Phthisis.	Fracture of Humerus.
2d week, 1 case.	2d week, 1 case.	2d week, 3 cases.	2d week, 2 cases.	2d week, 4 cases.	2 cases.	1st week, 1 case.
	3d week, 3 cases.	3d week, 2 cases.	3d week, 1 case.	3d week, 3 cases.		
Total 1	Total 4	Total 5	Total 3	Total 7	Total 2	Total 1

Ulcer of Cornea.	Pneumonia.					
2d week, 4 cases.	2d week, 1 case.					
3d week and subsequent, 2 cases.						
Total 6	Total 1					

The miscarriages all occured in blacks, as follows:—

Case I.—Louisa Lowber, aged 25, protection doubtful; on the seventh day of the eruption of confluent small-pox, she experienced pretty severe pain in the loins, and on the following day, a fœtus, three and a half months old, was expelled from the uterus. The patient died on the twelfth day of the eruption, having presented no local symptom of consequence after the birth of the fœtus.

Case II.—Mary Scott, aged 28, unprotected; on the fourteenth day of the

eruption of semi-confluent small-pox, in which the symptoms were of very moderate severity, free from complication, a fœtus between three and four months old was expelled without premonition; the woman died on the day following.

Case III.—Mary Green, aged 33, vaccinated in infancy; she was seized, on the 9th of March, with pretty severe pain in the loins, headache, vomiting and fever, having been previously exposed to the contagion of small-pox; indeed she resided in the most infected district, and on the 11th of March she was prematurely delivered of an eighth month child which survived. The patient was brought to the hospital on the 13th of March, the eruption having appeared in the morning of that day; she had some little tenderness of the abdomen, which subsided under the application of anodyne liniments and cataplasms; the pustules became confluent, but dried rapidly from the seventh day; on the 27th of March, she had a chill followed by the appearance of erysipelas of the face and neck, with much swelling of the tonsils; these symptoms were relieved, and the woman was discharged on the 24th of April, perfectly well, with her child, which was vaccinated immediately upon its entrance into the hospital and had escaped the disease.

There was no reason to think that any one of these three females had peritonitis during life, nor was there any evidence of inflammation of the peritoneum found at the autopsies of the first two; yet there were many cases of erysipelas in the wards during their sickness, and the last noted of the three had, as mentioned, an attack of erysipelas of the face and neck.

The two children who were prematurely born dead, were expelled with the membranes entire. They were carefully examined but no appearance of a variolous eruption was discoverable in either.

The case of fracture of the neck of the humerus occurred in an Irishman, 38 years of age. He said that he was vaccinated some years before, but no mark could be found to indicate the performance of the operation. The eruption was not very abundant, and was already drying when he entered the hospital. The accident occurred a few days before the appearance of the eruption, during a drunken frolic; he was habitually intemperate, and had a mild attack of mania-a-potu at the time of his admission. He was relieved of this by small doses of laudanum with infusion of wormwood, and was discharged on the forty-fourth day from his entrance, with firm union of the broken bone.

Inflammation of the larynx was one of the most interesting and important of the complications presented by the patients under our observation. There were twelve well characterized cases of this affection. The symptoms were less violent in these than in the frank laryngitis, as ordinarily met with; indeed sometimes they were so comparatively mild that the reality of the existence of inflammation was doubtful until the post-mortem examination established it. It was very usual to find the voice hoarse, with some cough and pain in swallowing, in the uncomplicated cases of small-pox; and, moreover, pressure on the larynx was very often painful, from the mere inflammation of the skin induced by the eruption. But when the larynx became inflamed,

peculiar symptoms were superadded to these, which permitted a correct diagnosis.

It is impossible to convey anything like a correct idea of the phenomena produced by the complication in question, by merely arranging in a tabular form, or by simply enumerating, the symptoms which seemed to be peculiar to itself; these were so modified by the disease upon which the intercurrent affection was ingrafted. It will be necessary to narrate the history of each case; this shall be done as briefly as may be.

Case I.—An unmarried female, aged 23, of a very nervous temperament, and subject to frequent hysterical attacks. The attack of small-pox occurred immediately after a menstrual period, during which she vomited blood and passed it per anum, as was usual with her at such times. She suffered much from pain in the back and head; these symptoms became aggravated on Tuesday, Nov. 18th, and on the 21st the eruption appeared, when the headache and lumbar pain ceased; the menorrhagia and diarrhœa continued for several days. Her manner, after she entered the hospital, was restless, uneasy, and irritable; the pulse 120 to 130; the throat very sore; pharynx and fauces red and covered as far as the eye could see, with an abundant eruption; on the surface, the pustules were confluent, excepting on the malar bones and the forehead, where the eruption was partially aborted by mercurial ointment, and remained small and flat, and distinct. On the seventh day the pustules became flattened, and filled with a thin yellowish-white fluid, several of the pock being dark coloured in the centre; the throat continued sore, and the voice hoarse, but strong; the pulse was at 140; she was exceedingly weak and depressed in spirits. (Ordered gr. ½ quinine and 2 grs. camphor every two hours, punch and essence of beef, gargle of capsicum for the throat.) On the ninth day, she had revived much in manner and in strength, and the pock contained a thicker and more yellow fluid; but her voice was whispering, the larynx was tender upon pressure, and speaking or coughing produced a sensation of pain and soreness at the pomum adami; the fauces continued to be red and spotted with the eruption, but no false membrane was visible. (The fauces and pharynx were touched with a solution of nitrate of silver, containing ℈j to an ounce of water; a blister was applied over the neck, Dover's powder was added to the quinine and camphor, and the punch was omitted.) The general symptoms continued encouraging until the thirteenth day, and the voice became rather more clear and strong, but the same tenderness of the larynx remained, and pain was experienced in coughing or loud speaking. On the thirteenth day, she became suddenly much more feeble, and died on the fifteenth day of the eruption, which was shrivelled, without any regular scabbing excepting where it had been scratched.

An examination was made 29 hours after death, and the following appearances were presented.—Face very much collapsed; the eruption on the surface generally was flattened and empty of fluid; that on the right arm, which in consequence of a chronic surgical disease, had been wrapped during all her sickness in a thick flannel bandage, and confined upon a splint, was smaller and less advanced than that on the other arm and the rest of the surface. The remains of numerous vesicles were observed on the mucous membrane of the mouth, fauces and pharynx. There were none on that of the œsophagus, but many little glands were elevated above its surface; no ulceration of the membrane, nor redness excepting at a point opposite the thyroid cartilage,

where it was arranged in folds and was red and swollen; below this point, the mucous membrane of the œsophagus, stomach, and intestines, was free from ulceration and eruption of any sort, but was pale; the intestines contained no blood, neither was there any abrasion of the surface of the digestive canal to explain the source whence the blood which had been ejected by vomiting and by stool, had proceeded. The larynx was lined by a thin and delicate false membrane, which was beautifully seen under water floating loosely. When this was removed, the mucous membrane itself was found to be injected of a bright red colour, and superficially ulcerated in patches, which, however, so nearly approached each other that it seemed, at first, as if the entire mucous membrane of the larynx was destroyed; the follicular orifices were numerously exposed on the ulcerated surface. The deepest ulcer was found on the posterior surface of the larynx, between the attachments of the vocal cords, where the mucous membrane was entirely destroyed over a circular space of six lines in diameter. The lining membrane of the trachea was reddened, but not ulcerated; below the origin of the bronchia the mucous membrane was seemingly healthy. The other organs were in a normal condition, excepting for some trifling congestion.

Case II.—Female, æt. 27. Sickened Dec. 11th, eruption appeared Dec. 14th; vaccinated in infancy. The eruption was discreet, and not very abundant. Moderate sore throat from the appearance of the papules. On the 18th the voice became hoarse with a hoarse cough, attended with pain in the larynx; on the next day the voice was whispering, the cough barking and stridulous; respiration noisy and full; pulse rose from 80 to 100 per minute; pain was experienced in coughing or in loud speaking, or in pressing the larynx, and in deglutition. The fauces were slightly inflamed and speckled over with the eruption. (Twenty leeches were applied on the throat opposite the larynx; on the day following a blister was placed at the top of the chest upon the sternum; the diet was strict, and gr. ¼ tartar emetic was administered every second hour. The symptoms improved speedily, and on the 22d Dec. the voice was clear, and the larynx free from pain and tenderness. The patient was discharged on the thirty-sixth day of the eruption.

Case III.—Black female, æt. 28, unprotected. Fifth day, eruption semi-confluent; pulse 96; throat more sore, so that deglutition was exceedingly painful; voice from having been merely hoarse, became whispered; larynx tender upon pressure, and felt painful when the patient coughed, spoke, or swallowed. (20 leeches applied to the neck over the larynx; fauces touched with a solution of lunar caustic; farinaceous diet; poultices on throat.) Seventh day, no pain in swallowing nor in speaking; voice whispered; pulse 112; pock contained a thin semi-purulent fluid; confluent on face. (Blister over the larynx; soup diet.) On the 8th the pock commenced drying; the voice remained as before; strength diminished. (Quinine gr. j every two hours.) She became more and more feeble, and died on the 11th day; the voice continued feeble, the respiration more laboured and frequent; and the complexion, where the skin could be seen on the face, bluish or purplish.

At the examination, 20 hours after death, the same condition of the fauces and the pharynx was presented as in the case first narrated; and in addition the mucous membrane was slightly œdematous. The upper part of the œsophagus was reddened, and its follicles were generally very apparent; the mucous membrane of the remainder of the digestive tube was pale. The lining membrane of the larynx was covered with a viscid secretion, and when

this was removed, the membrane itself was seen to be vividly injected in patches; there was also œdema of the submucous tissue; particularly about the rima glottidis. The mucous membrane of the trachea and bronchiæ was injected uniformly, and the lungs, especially at the root, were very much congested, as if in the commencing stage of inflammation. The heart was healthy, and contained pretty firm coagula of blood. The other organs presented no abnormal appearance.

Case IV.—Black woman, æt. 20; said she was vaccinated in infancy, but no mark could be discovered. The eruption appeared on the third day from the commencement of the sickness; it was preceded by bleeding from the nose, which recurred at intervals after her entrance. The tincture of iodine was painted over the left side of the face and forehead, while the eruption was still papular; and on this side the eruption was held in abeyance, the surface was less swollen and less tender than on the right side. She had, on the third day, much soreness of the throat in swallowing, while the voice was unaffected. The pulse gradually increased in frequency, and on the seventh day was at 120, and feeble; the throat was rather less sore, (poultices having been applied to the neck, and the fauces and upper part of the pharynx touched with the solution of lunar caustic, of the strength before used.) The pock were very imperfectly filled with a thin purulent fluid; the ankles and calves of the legs were covered here and there, with large blebs containing a thin bloody fluid. On the ninth day the pock commenced drying; throat not sore; pulse 124. From the ninth to the thirteenth day she continued feeble, without any local disease apparently, throat not sore; the voice clear but feeble; the pulse varying from 124 to 140. The same general treatment was adopted as was employed in the first and third cases. On the thirteenth day a cough commenced, it was stridulous in sound, and attended with pain in the larynx; the voice became more feeble and whispered, and speaking gave rise to cough and pain in the larynx, as did also pressure upon this organ. (A blister was applied over the pomum adami, and grs. iij of Dover's powder were administered every two hours.) The patient died on the fifteenth day, the laryngeal symptoms continuing with very slight, if any diminution in degree, and the mind wandering in delirium of a quiet kind.

The post-mortem appearances resembled, as closely as possible, those of the last mentioned case, excepting that there was a passive congestion of the lungs, liver and brain; and the mucous membrane of the stomach and intestines was of a clarety hue; the heart also contained very soft and dark-coloured coagula, and the lining membrane of the aorta and pulmonary artery was stained to the distance of a few inches above the origin of these vessels.

Case V.—A white woman, æt. 28, unprotected. She entered on the first day of the eruption. Until the seventh day her condition was as follows. Pulse feeble, ranging from 92 to 112; delirious every night; sometimes noisy and violent; eruption gradually becoming confluent; the pock imperfectly filled with a thin purulent fluid; the tinct. of iodine, which was applied over the right half of the face, upon the first day, had the effect of rendering that side less swollen and tender than the other, and of checking the development of the eruption. The throat was sore from the first; the voice was unaffected. On the seventh day the throat was less painful than it had been, but the voice became feeble, and whispered; the cough had a hoarse, barking sound, and was induced by swallowing or speaking; the larynx was tender upon pressure. The pock commenced scabbing on the eighth day; the gene-

ral symptoms not encouraging; strength flagging; the larynx presenting the same symptoms as on the previous day; the complexion dusky purple. So she continued until the twelfth day, gradually becoming more feeble, however; having an occasional paroxysm of coughing, during which the venous hue of her skin deepened; the respiration grew more frequent and laboured; the voice became exceedingly feeble; at times almost inaudible. She died on the twelfth day. No examination was made after death. The treatment pursued was similar to that used in the last mentioned case.

Case VI.—A black girl, æt. 18, from the Venereal Ward of the Blockley Hospital; unprotected. The eruption was abundant, but did not become entirely confluent; the tinct. of iodine produced a similar effect on the side of the face to which it was applied, to that attributed to it in the other cases. The eruption filled very well. On the fifth day the voice first became altered, the change continuing to increase until, on the eighth day, it was scarcely audible, and in a whispered tone; speaking was attended with a sense of soreness in the larynx, and productive of a feeble, barking cough; the larynx was tender upon pressure; the pulse during this interval ranged from 124 to 144. The eruption commenced drying on the eighth day. (A blister was applied over the larynx, and the caustic used as in the previous cases; small doses of Dover's powder were also administered; soup diet.) The general and local symptoms improved, so that on the twelfth day the pulse was at 106, with more volume, the voice had recovered its clearness but still remained feeble, the cough had ceased; the amelioration progressed, and the patient entirely recovered. A large syphilitic bubo which she brought with her, suppurated after her convalescence from small-pox, and consequently her sojourn in the hospital was protracted; she was discharged on the fifty-fifth day, dating from the appearance of the variolous eruption.

Case VII.—A black man, æt. 22, unprotected. The eruption became confluent; the pock contained a thin yellowish-white fluid, and commenced drying on the ninth day; the pulse at this time being 120 to 128, very feeble. The laryngeal symptoms first appeared on the seventh day, and were similar to those detailed in the preceding cases. The treatment pursued was as that before given, but no improvement followed either in the general condition of the patient nor in the symptoms of the local affection; on the contrary the voice became inaudible, and the cough more constant, being excited by a full inspiration, even: death occurred on the ninth day, the intellect unclouded to the last.

After death the mucous membrane of the larynx was found covered with a thin consistent false membrane, beneath which the mucous membrane itself was brightly injected in patches, and between these, it was superficially ulcerated; the ulcers being small and five or six in number; near the chordæ vocales the mucous membrane was more tumid than elsewhere. There were no ulcers or abrasions on the lining membrane of the trachea and bronchiæ, but simple injection; the lungs were stained at their posterior dependent part, but contained air throughout, and their tissue was of undiminished consistence.

Case VIII.—White woman of intemperate habits, æt. 38, unprotected. On the third day from the appearance of the eruption, the face was uniformly red and hot, and the papules were visible only upon close inspection, yet the skin felt rough; the laryngeal symptoms were as those described in the preceding cases, and well marked in degree; pulse 92. (A blister was applied

over the front of the neck; gr. $\frac{1}{6}$ tartar emetic was administered every two hours; soup diet.) On the fourth day a few vesicles were seen scattered over the face; no improvement in the laryngeal affection; pulse 96; irruption of menses; the mucous membrane of the fauces œdematous. (The solution of lunar caustic was freely applied over the fauces.) On the sixth, blood was expectorated after each attack of coughing, and a sanious fluid flowed from the mouth and nostrils; the menorrhagia had increased; the face had the appearance of being covered with a coating of thin white paste; pulse 120, very feeble. (Quinine was administered freely during the fifth and sixth days; the tartar emetic was at the same time discontinued.) The patient died at the close of the sixth day, the laryngeal symptoms remaining very much as at first.

After death the mucous membrane of the fauces and pharynx was found red and œdematous. The larynx contained a thin bloody secretion, its lining membrane was injected, of a dusky red hue; the submucous tissue was œdematous, especially at the upper part of the larynx, and also at the frœna extending from the base of the epiglottis cartilage to the root of the tongue; so that when the mucous membrane was punctured, a bloody serum exuded. There was no ulceration of the membrane of the respiratory tract. The bronchial tubes contained a thin sanious fluid; the cavities of the heart were filled with soft coagula; the lining membrane of the pulmonary artery was darkly stained.

Case IX.—A white female, unprotected. Eruption confluent; pock imperfectly matured; commenced drying on the eighth day. The laryngeal symptoms were as described above, dating from the eighth day, the pulse being 108, and feeble. Menorrhagia also came on. Death occurred on the twelfth day.

Case X.—A black woman, unprotected. Eruption confluent; menorrhagia; laryngitis commenced on the seventh day, with symptoms similar to those before described. On the eighth day this note was made of the patient's condition:—pulse 108, feeble; pock flattened; the cuticle covering each wrinkled, as if it had been soaked in hot water; breath has the odour of dried blood; expectoration bloody; no sign of pneumonia present; cough very hoarse and feeble; voice whispered; speaking painful; larynx tender on pressure. The patient died on the tenth day.

At the post-mortem examination, a thin false membrane was found in patches upon the mucous membrane of the interior of the larynx, with œdema of the glottis and epiglottis.

Case XI.—An Irish woman, æt. 31, unprotected, eruption discreet. The attack of laryngitis commenced on the seventh day, with laboured breathing, and a whispered voice; pulse 96; coughing and speaking were unattended with pain; the larynx was painful when pressed upon. She recovered and was discharged on the fifty-eighth day from the eruption, having been detained by the occurrence of boils and also of erysipelas.

The 12th case occurred in a white man who had been suffering for a year or more from pulmonary phthisis. The history which he and his friends gave of his sickness, was not sufficiently clear and explicit to permit of a certain opinion, as to whether the symptoms of laryngitis, which he presented at the time of his entrance, were exclusively dependent on the attack of small-pox.

He died on the day following his admission, on the ninth from the appearance of the eruption, which was confluent.

The most frequent complication was from erysipelas. It appeared at all stages of the disease, sometimes during the maturation of the small-pox pustules, sometimes later, during the period of convalescence from the variolous affections. All the tissues and regions of the body, which erysipelas usually affects, were implicated in the different cases; the instances in which the serous membranes were inflamed, were undoubtedly examples of internal erysipelas, judging from the products of the inflammation, and from the co-existence, in some cases, of external erysipelas in the individuals affected, and also from the prevalence of the latter in the wards. The following table will exhibit the seat of the complication in 59 cases.

Seat.	No. of Cases.	Result.		Eruption of Small-pox.		
		Died.	Recov'd.	Confluent.	S. Confl.	Distinct.
The Neck.	15	2	13	3	2	10
Neck and Face.	9	3	6	4	2	3
Neck and Fauces.	7	2	5	2	1	4
Head and Neck.	4	1	3	1	1	2
Head and Limbs.	2	1	1	1	1	
Head and Breast.	1	1		1		
Face.	9	3	6	2	2	5
Joints, cell tissues about the joints.	4	1	3	2		2
Peritonitis.	3	2	1	1		2
Pleurisy with inflammation of liver.	2	2		1		1
Pleurisy alone.	2	1	1	1	1	
Pleurisy, Hepatitis, and Peritonitis.	1	1				1

Generally the attack of erysipelas was ushered in by a chill; and when the face and head were the affected parts, the appearance of the erysipelatous inflammation was preceded by tenderness and swelling of the cervical glands.

It is impossible, of course, to determine the influence of the complication in question in the production of the fatal result which is above noted in 21 cases of small-pox attended with erysipelas. It was at once the index of a depraved condition of the fluids, and an added source of danger to life. Every precaution was taken to secure cleanliness of the apartments in which the sick were placed, and constant renewal of the air. The wards were white-washed from time to time; the floors were cleansed frequently; the apartments were

abundantly furnished with windows and ventilators, and heated each with a stove. It may be mentioned, however, that erysipelas was quite prevalent in the city during the period when the hospital was open, as will be seen by comparing the number of cases of the disease in the institution, with the number of deaths reported from erysipelas in the bills of mortality, in different months.

	Number of cases of erysipelas in the Hospital.	Number of deaths from erysipelas in the city.
1845, November,	1	0
December,	6	0
1846, January,	14	9
February,	21	4
March,	13	2
April,	4	3
May,	0	8
August,	0	2

The cases of internal erysipelas were highly interesting. The serous membranes were chiefly affected, alone affected, indeed, except in four instances, in which the liver and the right lung were also implicated, subsequently, however, to inflammation of the pleura of the right side. The symptoms which marked the invasion, and those which accompanied the progress of these intercurrent inflammations, were comparatively mild; excessive pain was rarely complained of, nor were the inflamed organs very sensitive to external pressure; moreover, the fever which was consequent upon this accession of disease was not particularly marked, or added but little, apparently, to that which already existed as a part of the original variolous affection. But, careful and repeated observations of the symptoms presented during life, permitted the formation of a correct diagnosis, as to the existence and character of the complication, and the date of its occurrence; and the post-mortem examination afforded, unfortunately, in many instances, the most convincing proof of its accuracy.

A brief summary of the history of these internal erysipelatous inflammations, as they manifested themselves, will not, we trust, be uninteresting.

There were three cases of peritonitis unconnected with any other internal phlegmasia.

Case I.—A black girl, æt. 16, was vaccinated at the age of 6 years. The attack of small-pox was very mild; the eruption, very limited in amount, commenced drying on the seventh day. On the eighth day she was sitting up, feeling quite well and strong. On the fourteenth day, she had been taking care of a child all day, and in the evening felt tired and feverish. In the night she experienced pain in the abdomen, accompanied by vomiting of a green-coloured fluid; soon after she had a chill, with marked increase of fever. On the morning of the 15th, her pulse beat at 100 per minute, skin hot and moist; abdomen full and resonant, tender on pressure, and the seat of moderate pain at times; she felt exceedingly weak; features pinched, eyes sunken. (Fifty American leeches were applied over the abdomen, afterwards hot fomentations

with laudanum; two grs. calomel, and grs. iii Dover's powder were administered every two hours, and the bowels were moved by an enema; diet rigid.) On the 17th, pulse 116, feeble and regular; abdomen full and resonant, but free from tenderness and pain, excepting when flatus was passing through the intestines; tongue moist, covered with a thin white fur; no vomiting. (The calomel and Dover's powder were continued, as before, and also the hot fomentations; ten drops of the oil of turpentine were administered, with the view of causing the discharge of flatus; beef tea as nourishment.) On the 18th, pulse 120, very feeble, indeed; skin cool; features more sharp, eyes more sunken; tongue dry; occasionally vomiting of a green fluid; frequent hiccough; belly full and hard, tender on pressure. (A blister was applied to the abdomen; the calomel was omitted, as the gums were already swollen, and gr. j sulphate of quinine was substituted for it; milk punch was also given.) The patient died on the morning of the 19th day, from the variolous eruption, on the 6th day from the commencement of the peritonitis.

At the-post-mortem examination, the effects of diffuse inflammation of the peritoneum were found; layers of soft fibrin, resembling very much in appearance the partially-formed curd of milk, were effused between the folds of the intestines, between the stomach and the transverse colon, upon the omentum, and on the liver; the same sort of curdy matter existed abundantly along the sides of the spinal column, and in the pelvis, covering also the organs in the latter cavity; the liver was not altered in consistence, nor were the other solid organs of the abdomen, or the viscera of the pelvis and thorax, appreciably diseased. The brain was not examined.

Case II.—A black girl, æt. 19, vaccinated in infancy; the variolous eruption was discreet, commencing to dry on the sixth day, when she was sitting up dressed. On the ninth day, the glands of the neck became tender and swollen, and the blush of erysipelas appeared upon the face; these symptoms had disappeared on the 11th day, and the glands of the groins became swollen and tender. On the 12th day she had a chill followed by fever; pain in the abdomen, particularly on the left side; vomiting of a green fluid; the belly was tender, especially on the left side, full, soft, and resonant; the countenance wore an anxious expression; pulse 100; moderate heat of skin; headache; white slimy fur on the tongue. (50 leeches were applied to the abdomen, and calomel and Dover's powder were given as in the other case; very thin beef tea as nourishment.) On the 13th day, her condition generally remained as it had been on the previous day, with less pain and tenderness, however, of the abdomen. (Warm turpentine liniment was frequently rubbed on the parietes of the abdomen, and hot fomentations were applied steadily.) On the 14th day, pulse 120; feeble; occasional nausea, without vomiting; pain in turning in bed; decubitus dorsal, with limbs drawn up; tenderness becoming more diffused over the belly, with occasional darts of pain. (A large blister was applied over the abdomen, and the vesicated surface was dressed with mercurial ointment mixed with three grains of opium; weak brandy and water was given.) In the course of the day, towards night, a profuse diarrhœa came on; at the same time the glands in the groin became much more tender, and surrounded by erysipelatous inflammation; the fulness, tenderness, and pain of the abdomen subsided. On the following day the gums were found to be sore; pulse 100; very slight fulness of the belly; no tenderness; glands in the groin, especially of the left, very painful; erysipelas of the upper part of the thighs. (The calomel was discontinued; gr. j quinine was ordered every second hour; nutritious broth for diet; poultices of slippery elm bark to the groins.) The

patient continued steadily to improve, the inflamed glands did not suppurate, and she was discharged on the twenty-third day from the appearance of the variolous eruption.

Case III.—A white girl, æt. 19, vaccinated in infancy. The history of this case resembles in some respects that of the last; but its termination was different. The attack of small-pox was in itself mild; yet owing, probably, to original weakness of constitution of the patient, the pock filled imperfectly and commenced drying on the ninth day; she then improved very much, and continued convalescing until the 20th day, when she had a chill followed by fever, and the other general and local evidences of peritonitis, similar to those already narrated; in addition to these, however, a slough appeared on the sacrum on the 25th day; erysipelas attacked the upper part of the right thigh, on the 26th, and the patient died on the 44th day from the eruption of small-pox, on the 24th day from the commencement of the peritonitis.

The appearances on dissection were as similar as possible to those of the case first narrated; they need not, therefore, be detailed.

Having had frequent opportunites of studying the post-mortem appearances in cases of puerperal peritonitis, I was struck with their very close resemblance to those of the two cases of peritonitis herein described;—the only difference being that, in the former the broad ligaments of the uterus and the ovaries were involved in the inflammation to a much greater degree than in the latter, in which merely the serous membrane was inflamed, the tissue beneath being unaffected.

Of erysipelatous pleurisy there were five cases, viz: two of simple pleurisy, two of inflammation of the right pleura combined, in one instance, with pneumonia of the same side, and in both with hepatitis; and one of inflammation of the liver, peritoneum, both pleuræ and the left lung.

Case I. occurred in a white man, æt. 18, vaccinated in infancy; the eruption became semi-confluent, and commenced drying on the sixth day; on the 14th several boils appeared on the face and arms; on the 26th he had an attack of erysipelas of the face; on the 32d day he was quite well, and expected to be discharged soon. But eight days after, on the 40th from the eruption, he had a chill, followed by fever and sharp pain under the left nipple; this pain was aggravated by coughing, prolonged inspiration, and pressure; the sounds and action of the heart were as they should be, excepting as regards frequency of pulsation; the pulse was 96; with 38 inspirations per minute; the only physical sign was a diminished expansion of the left lung. (Six cups were applied over the left side of the chest, followed by hot fomentations; and $\frac{1}{8}$ gr. of tartar emetic was administered every second hour.) On the following day, a soft friction sound became audible over the left pleura, before and behind, the heart remaining unaffected in its sounds, action and dimensions; the pain had subsided very much; pulse 72. (The tartar emetic and the poultices continued as before.) The amendment progressed, and the patient was discharged on the 39th day from the appearance of the eruption.

Case II.—A black woman, æt. 21, unprotected. The eruption became confluent, flattened, and did not begin to dry until the 10th day: (the woman entered the hospital on the first day of the eruption; her symptoms were then not encouraging, and the prognosis was unfavourable.) On the 12th day the pulse

was 112, feeble; pain in right shoulder; no pain in chest; none in breathing; no cough; soft friction sound in both acts of respiration heard all over right side of the chest, most clearly at the root of the lung. (A blister was applied over the right side of the chest, divided doses of calomel and Dover's powder were administered, and soup was allowed as nutriment.) On the following day there was an abundant effusion in the right pleural cavity; no improvement in the symptoms. The patient died on the 14th day.

The right pleural cavity was found after death, partially filled with a greenish-yellow fluid rendered thick by the admixture of soft fibrine, which existed in it in flocculi, looking like half solidified pus; the pleura was covered with similar masses of matter, and the lung was forced into the posterior part of the chest; the consistence of the lung was undiminished, and air was readily forced from all parts of it; its colour was of a dusky red. The left side of the chest and the abdomen were unaffected. There were a few circular abrasions on the mucous membrane of the pharynx; that of the larynx and trachea was simply reddened.

Case III. is an illustration of the combination of pleurisy with inflammation of the liver. A black man, æt. 30, unprotected; the eruption became semi-confluent, and filled very well; scabbing began on the eighth day, and his condition was very favourable indeed. The most interesting feature in connection with this case of small-pox was, that the patient was exceedingly delirious from the commencement of the eruption, and continued so for several days; it seemed probable that the delirium depended upon the condition of the skin, as that which often attends severe burns and scalds, and accordingly Dover's powder was freely given at intervals, with the effect of overcoming it. From the 8th to the 12th day, his condition was steadily improving; pulse 92, on the latter day; strength quite good. On the 13th he had a slight chill, followed by fever, swelling and tenderness of the cervical glands and enlargement of the tonsil of the right side; these local affections subsided in the course of 24 hours, and instead of them, the knee-joint and the surrounding integument became swollen and painful. On the 15th an abscess was formed exterior to the knee, and the right elbow became enlarged and painful; pulse 86, soft; soft friction sound over the right pleura, and very slight dulness on percussion; no pain in the chest. (A blister was applied over the right side; soup was ordered as nourishment.) On the 17th, the conjunctivæ were of a yellow hue, and the urine was tinged likewise; there was no tenderness or fulness of the right hypochondrium; pulse 86; skin pleasantly warm; tongue clean; respiration as before; no increased dulness on percussion; belly soft. (Strong turpentine liniment was rubbed over the right hypochondrium.) On the 19th the right arm was painful and generally œdematous, with a hard and circumscribed swelling of the brachialis internus muscles; abdomen full and resonant, but not tender; the liver had become larger, as indicated by percussion; no pleuritic liquid effusion; tongue dry; pulse 104; mild delirium. (A blister was applied over the liver, and the vesicated surface dressed with mercurial ointment; gr. j quinine and gr. ij camphor were administered every second hour.) On the 20th, the right arm was still swollen, but no fluctuation could be detected at any point; belly tense, resonant all over; occasional cough, for the first time to-day, same condition of pleura and liver. He died on the 20th day of the eruption.

The following was the result of the post-mortem examination. Face thin and sunken, almost free from scabs; œdema of both arms; induration of the brachialis internus of the right arm, but no pus nor slough in its tissue.

Abdomen but little distended, soft and resonant; no liquid effusion in its cavity, nor lymph on the intestinal convolutions. The liver was large, adherent to the diaphragm and stomach by bands of recent lymph, soft and easily torn; no other effusion about the organ; internally it was more red than natural, and to the depth of an inch from its convexity its tissue was softened. The right lung was adherent to the costal pleura by short bands of fibrine, which was more firm and dense than that effused upon the liver; the posterior part of the lung was dark-coloured, giving exit when cut to more blood, and of a darker hue than was natural, or than escaped from the tissue of the left lung; it contained air throughout, however, and its consistence was undiminished; there was no liquid effusion in the pleural cavity. The brain and its membranes were apparently healthy, excepting for an undue amount of blood in the larger veins, and of serum in the ventricles.

Case IV. is an instance of pleurisy combined with inflammation of the liver and right lung. It occurred in a black woman, æt. 24, in whom the eruption of small-pox was discreet, and unmodified by any previous protection. Her health had not been very good for some time; the eruption commenced drying on the 10th day, having maturated slowly and imperfectly. On the ninth an ulcer appeared upon the edge of the right cornea; on the seventh the pulse was at 84, and gradually increased in frequency, until on the 12th it was at 132; the skin hot and dry; cought frequent, dry and painful; the right hypochondrium was full and tender; the percussion on the right side of the chest was slightly dull, and both acts of respiration were attended on this side with a friction sound; no expectoration; no râle. On the 13th the breathing was still more frequent; percussion of right side of chest dull from the middle of scapula downwards; conjunctivæ yellow, inability to lie on the right side in consequence of the pain and coughing and difficulty of respiration which was thereby occasioned. (Calomel and Dover's powder were prescribed at the commencement of the attack, and a blister was applied over the right side of the chest.) The symptoms and physical signs showed no diminution of disease, and the patient died on the 15th day of the eruption.

The following were the post-mortem appearances. The right pleural cavity contained a considerable quantity of yellowish serum tinged with red, and masses of yellow matter, half fibrine and half pus in appearance. The lung was only partially displaced, covered on its exterior with a layer of yellow coloured false membrane, with bands running here and there between the opposed pleural surfaces; these bands were soft and easily torn, the lower lobe of the lung contained no air, excepting at its posterior, superior, and internal edge, over a space as large as a hen's egg, from which a small quantity of air escaped, mingled with bloody serum; elsewhere the lower lobe was very dense, easily torn, of a pale red colour, and from the small tubes a fluid issued resembling pus in colour. The other lobes of the right lung were less solidified, and contained air mingled with fluid; their posterior parts contained more blood, and had also an œdematous appearance; the tissue was more easily torn than in health, but less so than that of the lower lobe. The pleural surface of the diaphragm was covered with false membrane, and presented also on its surface two large patches of ecchymosis, as it seemed at first, but the vessels were distinct and unruptured. The right lobe of the liver was attached to the diaphragm by long bands of tenacious fibrine, and its convexity was covered abundantly with masses of softer matter; its consistence was diminished to the depth of half an inch below its convex surface, and in this part its colour was more yellow than of the subjacent unsoftened portion. The

left lobe of the liver was seemingly unaffected, as were also the other abdominal viscera; the belly contained no effused fluid. The left side of the chest was not diseased.

Case V. affords an example of remarkable complexity of disease. A black man, æt. 21, unprotected, had a mild attack of small-pox, the eruption distinct, and commencing to dry on the eighth day; from this to the 13th day he was free from fever and local complication, and was convalescing very satisfactorily. On the 13th he complained of pain in the abdomen, and tenderness on pressure, both of which were entirely removed by the operation of a dose of oil; he had no fever; no previous chill. On the 19th he still preferred lying in bed; felt no pain in the abdomen; slight tenderness on pressure; coughed occasionally without pain; expectoration scanty; sputa consisting of a viscid mucus of a yellowish colour, sometimes streaked with blood rather than mixed or tinged with it. Decubitus unrestricted to any position; respiration 34 per minute, short but not laboured; pulse 92, soft, without heat of skin; tongue of a bluish hue; percussion dull from the root of the right lung downwards, the patient sitting up; very slight bronchial respiration and vocal resonance over the same space; distinct friction sound heard over the two or three lower ribs posteriorly; no râle; when the patient lay upon his belly, the percussion of the right side of chest posteriorly was scarcely different, but the friction sound was less clear, and a mucous râle was now and then audible; the intercostal spaces were not tender; there was no fulness of the right side of the chest as compared with the left; prolonged inspiration was not painful. No abnormal sound on the left side. (A blister was applied over the posterior inferior portion of the right chest; small doses of calomel and Dover's powder were administered at intervals of three hours; diet, beef tea and farinaceous articles.) On the 20th, 21st, and 22d days, the physical signs continued very much the same, with the addition of tenderness on pressing the right hypochondrium; no yellowness of conjunctivæ; pulse, on the 22d, at 84; with 26 inspirations per minute; belly soft and full. (The calomel and Dover's powder were omitted, the gums having become affected on the 22d day; the belly was rubbed with strong turpentine liniment, and covered with hot fomentations.) On the 23d pulse 88; respiration 24 per minute; pain in right and left hypochondrium on coughing; countenance good; tongue clean and moist; he said that he felt better every day. (Ordered gr. ij iodide of potassium three times daily.)

The condition of the patient was improving both as to his strength, and with respect to the signs connected with his chest and abdomen, until the 45th day; the only new symptom which presented itself was night sweating to a moderate degree, beginning about two weeks from the last date. (The iodide of potassium was continued, and iodine ointment was rubbed over the belly and chest.) On the 45th day, the respiration was distinctly audible all over the right lung, without râle, and with but a very faint friction sound developed by a very full inspiration; slight dulness on percussion. At the root of the left lung there was increased resonance of the voice, and a crepitant râle, with dulness on percussion over a space as large as the palm of the hand; slight febrile movement; no night-sweats; appetite pretty good; strength sufficient to permit him to sit up, and walk about the room every day. In a day or two a friction sound became audible on the left side of the chest, opposite the root of the lung. (A blister was applied on this region.) On the 51st day the respiratory sounds were as on the last date over the right chest; large fluid effusion in left pleural cavity; percussion of abdomen dull,

becoming flat in approaching the pubis, with a feeling of fluctuation, occasional pain in the belly. From this time his condition varied, sometimes he would feel quite well, and again very miserable. At the time of his death, 70 days from the appearance of the eruption, he had hectic fever; at times the respiration in the right lung was pretty clear and free, without friction sound; slight dulness on percussion. On the left side of the chest, the percussion was flat nearly to the summit, no respiratory murmur audible; at the root of the lung the voice was very resonant; no bronchial respiration; no ægophony. The abdomen was very much distended; percussion flat below the umbilicus; obscure fluctuation recognizable. His mind was entirely unaffected throughout his sickness.

Post-mortem Appearances.—Emaciation. Bronchial glands generally enlarged and tuberculous. Firm adhesions of right pleural surfaces. No fluid in the cavity. The left pleural sac contained a very large quantity of sanguineous serum; the opposite surfaces of the serous membrane being connected by long bands of fibrine, and the lung compressed against the spine, so as to occupy a space about as large as a man's fist. The lung contained no air; its tissue was generally softened. Both lungs were of a dark slate colour, and both contained tubercles, varying in size from that of a pin's head, to that of a hazelnut, of a dirty white hue, and easily broken up. The largest of these tuberculous masses were surrounded by a false membrane. There was no ulceration in the lungs. The false membranes of each pleura contained small tubercles. The abdomen was abundantly filled with dark straw-coloured serum. The peritoneum was everywhere covered with fibrine, which was studded with little tubercles, generally as large as a grain of linseed, white and hard. All along the inferior side of the transverse colon, stretched a mass of fibrine about as large as the pancreas, and looking much like it; but filled with soft white tubercles, a little larger than a pin's head. The intestinal convolutions were massed together by soft fibrine, also containing tubercles. The intestines were distended with gas, their mucous membrane was pale; the follicles of Peyer and of Brunner, were of a bluish colour and readily distinguishable, not ulcerated. The mesenteric and mesocolic glands tuberculous. The entire convexity of the liver was attached to the diaphragm by firm close bands of fibrine, which contained tubercles. The organ was of its usual size, the consistence of the right lobe diminished; it contained no tubercles. The spleen was also attached to the peritoneum by bands of tuberculous false membrane, and it contained tubercles varying in size from a grain of linseed to a pea. The kidneys were similarly covered with masses of fibrine, containing tubercular matter; their internal appearance was not abnormal. The brain and heart did not deviate, in any appreciable manner, from the healthy condition.

The following case of inflammation of the lining membrane of the heart and of the pericardium, is interesting on many accounts. It occurred in the course of a severe attack of confluent small-pox, in an unprotected individual, as the first symptom of rheumatism, the articulations becoming subsequently affected, and was cured by very mild remedial measures.

A black man, æt. 21, unprotected, went to church, as usual, on Sunday, and on Monday morning was suddenly attacked with violent pain in the back, headache, and repeated vomiting; he drank freely of some hot aromatic infusion, and in the evening a papular eruption appeared on his face, when the

preceding symptoms were relieved and the accompanying fever subsided very much. He came to the hospital on the fourth day of the eruption. On the eighth day, his pulse was at 92; soft, of pretty good volume; but little sore throat; voice clear and strong; slept well on the preceding night, not delirious; appetite and relish for food; eruption confluent, pock flattened on the face, containing purulent matter. On the hands the pock presented a shrivelled wilted appearance. (Gr. j sulph. quinine, every two hours; beef tea.) On the ninth day, pulse 120, more feeble; face more swollen and sore. Some of the pock on the face commencing to dry. (In addition to the last prescription, a wineglassful of weak brandy punch was ordered every three hours, and the face to be frequently wet with cold mucilage.) His condition improved, so that on the 13th his pulse was at 96, and becoming more full and strong. The punch was omitted.

On the 14th, he first experienced severe pain in the præcordial region, covering a space as large as the palm of the hand, sometimes sharp and cutting, increased by motion of the chest; but present constantly. Percussion over the heart not more dull than natural, painful. Impulse quick, but not particularly forcible; both sounds distinct; first prolonged over the whole præcordium, shriller and on a higher key at the base than at the apex, and heard along the course of the primitive carotids; 2d sound unaltered; respiratory murmur heard over the region of the heart and elsewhere, no râle; pulse 90, regular, soft and quick in its beat; skin warm. No pain in any of the joints. (Three cut cups were applied over the heart, and afterwards hot fomentations; farinaceous diet; half grain calomel and three grs. Dover's powder to be given every second hour; quinine to be omitted.) On the 15th, pulse 100, same character as before; slight occasional cough, attended with increase of pain over the heart; general symptoms encouraging. The pain was relieved temporarily by the cups and fomentations; but to-day it is as great as yesterday, with the same tenderness on pressure over the heart, and only there; no manifest fulness of this region; percussion appreciably dull from the apex of the heart upwards towards the clavicle, diminishing above the nipple, quite dull between the nipple and the sternum. Sounds of the heart of the same character as yesterday; but less audible; no friction sound; respiratory murmur distinctly heard all over the front of the chest. On the 16th the general and local condition remained very much as before; the gums were a little sore, and the calomel consequently was directed to be given three times daily. Dover's powder as before; a blister to be applied over the heart. On the 18th, the percussion over the heart was decidedly less dull, and the first sound had lost some of its blowing character. The only pain complained of was that arising from the blister, which acted very well, and that which had attacked the right knee-joint, during the night; accompanied with redness of the skin and swelling of the joint itself. (A liniment containing oil of turpentine and laudanum was directed for the joint, to be followed by the application of a warm poultice.) On the 19th, the swelling and pain of the knee had very much abated; but the elbows were painful and swollen. (The same applications were ordered for the elbows as for the knees. The calomel was directed to be given only at night, with five grains of Dover's powder.) On the 22d, the elbows and the knees were free from pain; but the wrists were swollen and painful. Pulse 96; no pain in chest; percussion over the heart not appreciably dull; first sound remained prolonged. There had been no audible friction sound. (Ordered ten drops of wine of colchicum, with a teaspoonful of the officinal solution of sulph. morphia, three times daily; wrists to be treated as were the other inflamed joints; blisters over the præcordium;

the calomel and Dover's powder to be omitted.) On the 37th day, the sounds of the heart were perfectly natural, and the patient was to all appearances free from disease. He was discharged on the 42d day from the appearance of the eruption.

Some of the other complications presented many points of interest, but the limits of this article do not permit any farther detail.

Of the 287 cases of variolous disease, 69 died. The annexed table will show the circumstances of greatest interest attending these fatal cases.

Whites.		Blacks.	Date of Decease.	Whites.	Blacks.
Total . . .	31	38	On the 4th day.	1	1
Males . . .	21	23	" 5th "	2	1
Females . . .	10	15	" 6th "	2	1
Unprotected . .	26	34	" 7th "	5	2
Vaccinated . .	5	3	" 8th "	8	4
Prot. by small-pox .	0	1	" 9th "	1	6
Confluent . .	25	30	" 10th "	2	3
Semi-confluent .	4	4	From the 10th to 14th.	6	8
Discreet . . .	2	4	During 3d week.	3	8
Under 5 years .	1	1	" 4th "	0	2
Between 5 and 15 .	1	0	After the 4th "	1	2
Between 15 and 25	13	15	Complications.		
Between 25 and 35	7	10	Laryngitis.	6	3
Between 35 and 50	7	8	Ext. Erysipelas.	0	6
Between 50 and 60	2	2	Peritonitis.	1	1
Above 60 . .	0	2	Pleurisy.	0	1
			Pleurisy and other in.	0	3
			Miscarriage.	0	2
			Mania-à-potu.		1

It will be observed that one of the deaths occurred in the case of a black man who had experienced a previous attack of small-pox. He had never been vaccinated, but in the summer of 1844, only six months before his admission into the hospital, he was seized with small-pox in New Orleans, and bore upon his face more than thirty deep pits caused by it. The second attack was not severe, the pock being discreet, and maturating regularly and well; but, on the eighteenth day of the eruption, he became affected with erysipelas of the head and face, and died on the 23d day.

Of the deaths, eight occurred in persons who had been previously vaccinated. The attending circumstances may be thus summed up:

	Colour.	Age.	Date of Vaccination.	Eruption.	Complication.	Date of Death.
1	White.	24	In infancy.	Confluent.	None.	On the 5th day.
2	White.	24	do.	do.	do.	" 10th "
3	Black.	16	at 6 ys. old.	Discreet.	Peritonitis.	" 19th "
4	Black.	20	in infancy.	do.	Erysipelas.	" 14th "
5	Black.	35	at 25 yrs. old.	Confluent.	None.	" 10th "
6	White.	21	in infancy.	do.	do.	" 10th "
7	White.	19	do.	do.	Peritonitis.	" 44th "
8	White.	35	do.	do	None.	" 7th "

In all these cases, excepting the fifth of the table, (in which there was good reason for thinking that the person had been vaccinated, as he stated, although the mark could not be seen,) the scar produced by the vaccination was very manifest; in the last-mentioned instance but one of the table, the scar was broad, white, punctuated, but superficial; in the other instances it was circular, depressed, punctuated, and varying in size from one-quarter to one-half an inch in diameter.

By comparing the proportion of deaths among the blacks to the whole number of blacks admitted to the hospital, (as stated in the second table,) with the same ratio among the whites, it will be found that the former is considerably greater than the latter; this difference is owing, in all probability, to the much greater rarity of vaccination among the blacks than among the whites. Thus of the 121 blacks admitted, 84 were unprotected; while of the 166 whites, only 53 were without the protective influence of vaccination, and another had been inoculated, making 54 in all.

Post-mortem Appearances.—Thirteen examinations were made after death, of the bodies of individuals who had died apparently from the small-pox alone, uncomplicated with any other affection. The lesions, when any existed, were not constant, and not always produced by the disease during life; thus the congestion of the solid viscera, which was the most commonly met with, seemed to be frequently a consequence of death, although probably favoured by the condition of the blood.

Of the thirteen subjects, three had been vaccinated, and had died of confluent small-pox; the remainder were unprotected; five died of confluent small-pox, which terminated from the fifth to the tenth day; three of semi-confluent, ending on the seventh and eighth days, and two of the discreet form, terminating on the ninth and tenth days.

In the three vaccinated cases, death took place in one on the fifth day, in

one on the seventh, and in the third on the tenth day. In all of these the eruption had been exceedingly confluent, filling very imperfectly in the last, and in the other two instances remaining flat; so that in the first case the face looked as though it had received a coating of thin white paste; in the second the fluid was rather more turbid and yellowish; in the third, desiccation had commenced on the seventh day, and the face was covered with thin yellow crusts. In all, the cuticle was easily removed during life, by accidental or intentional rubbing on the part of the patient, to relieve the irritation of the skin, and from the exposed surface blood exuded; in the last mentioned instance, in which death occurred on the tenth day, large blebs had formed upon the ankles and legs, filled with bloody serum. In all, the blood found in the cavities of the heart was imperfectly coagulated, the clot being soft and dark coloured; the gastro-intestinal mucous membrane was darker in hue than is natural, but free from ulceration or abrasion, or any unusual appearance of the follicles; the liver, spleen, and kidneys were stained in the same manner, but their consistence seemed unaltered materially; the lungs were congested, especially at their posterior part; the pleural cavities contained a small quantity of dark-coloured serum; the brain presented when its tissue was cut, numerous dark red points; the ventricles contained more or less serum, altered in colour by the admixture of the colouring matter of the blood, and the vessels on the surface of the convolutions externally were turgid; the consistence of the organ seemed to have been slightly diminished, without there being any evidence of inflammation. In all, the mucous membrane of the trachea, larynx, œsophagus and pharynx was injected; dark-coloured, particularly in the last case; not softened in any, and presenting numerous small abrasions, as it seemed but the uniform dark colour and turgescence of the membrane rendered this opinion uncertain.

The appearances noticed in the autopsies of the unprotected cases were similar to those above described; variations existing, of course, in the degree of the congestion present, and in the serous exudations thereby induced.

The duration of the stay of each patient in the hospital was noted, and is given in the following table; the time being counted from the appearance of the eruption in each, when this could be accurately fixed. Each patient was retained until the scabs had all fallen off, and until any intercurrent affection had been cured or sufficiently relieved. Of course, these conditions were very much modified by accidental or constitutional circumstances. Thus, in some instances, although the eruption had been but scanty, and the patients had been vaccinated, the complete removal of the scabs from the surface was delayed by originally feeble health; by the occurrence of some severe disease, or of some less serious affection which rendered convalescence lingering.

The same table will show the frequency of the different kinds of small-pox, as to the amount of the eruption; the sex of the patients, their colour; and the time which had elapsed since the vaccination of those who had been thus protected. Generally, the patients had been vaccinated in infancy, and

but once in every instance; in no case had revaccination been practised, and this fact, considering the very common custom of revaccinating, during the years 1845–6, affords a very strong argument in favour of the practice; since more than one-half of the patients had been vaccinated at one time or another, and presented on their persons well marked scars left from the operation. These scars were whiter than the surrounding skin and generally circular in shape, depressed and punctuated.

Date of Discharge. Time.	Vaccinated Whites.	Unvaccinated Whites.	Vaccinated Blacks.	Unvaccinated Blacks.	Total.	Time elapsed since vaccination.						
						Years.	Cases.	Years.	Cases.	Years.	Cases.	Total
1st week	0	0	1	0	1							
2d "	22	1	6	4	33							
3d "	37	2	7	5	51	4	1	19	10	29	1	
4th "	22	4	3	7	36	8	3	20	8	30	9	
5th "	8	8	7	15	38	9	2	21	8	33	4	
6th "	7	5	0	8	20	10	3	22	9	34	5	
7th "	3	3	2	3	11	12	1	23	5	37	3	
8th "	2	3	0	4	9	14	2	24	6	38	1	
9th "	1	1	0	2	4	15	6	25	10	40	4	
10th "	1	0	0	0	1	16	2	26	6	44	2	
11th "	2	1	0	1	4	17	2	27	6	46	2	
12th "	0	1	0	1	2	18	11	28	4			
Total.	105	29	26	50	210	Total.	33		72		31	136

Eruption. Confluent.	Semi-Confl.	Discreet.	Males.	Females.	Protected.	Unprotected.
39	21	150	141	69	131	79

Complication.												
Ext. Erysipelas.	41	Peritonitis.	1	Pleurisy.	1	Laryngitis.	3	Pericarditis,	1
Miscarriage.	1	Ulcer Cornea.	5	Iritis.	1	Boils.	39	Fract. Arm.	1

Among the patients were two white persons who had been inoculated. One was a lieutenant in the U. S. Navy, 35 years of age, who was inoculated in infancy, and was vaccinated at the age of 25 years, ten years prior to the attack of small-pox, for which he was admitted to the hospital. The attack was exceedingly mild, the pock commenced drying on the seventh day, and he was discharged on the 18th. The other was a woman, 46 years old, who was inoculated in infancy; in this case, also, the eruption was very scanty, and commenced drying during the formation of the vesicles: she was discharged on the 16th day.

From the table just given, it would seem that, of the vaccinated persons who became affected with the variolous disease, more than twice as many cases occurred within the ten years, from 19 to 28 inclusive, than at either of the other two similar periods recorded. And by referring to another tabular statement, it will be seen that of the eight deaths which happened to vaccinated persons, six occurred within the same period.

It is a matter of considerable interest to note the effect of vaccination in

modifying the variolous disease. The following table will exhibit the impression thus produced upon the eruptive and maturative stages of small-pox, as contrasted with the unmodified disease, dating from the commencement of the sickness.

The Eruption appeared in the	Vaccinated.	Unvaccinated.	The Eruption commenced drying	Vaccinated.	Unvaccinated.
On 1st day	0	1	On 4th day	1	0
2d "	18	13	5th "	6	0
3d "	42	40	6th "	29	6
4th "	41	25	7th "	28	9
5th "	17	11	8th "	19	47
6th "	2	1	9th "	3	9
			10th "	1	2
			11th "	0	2
Total	120	91	Total	87	75

The treatment pursued did not differ from that usually recommended in treatises on the subject of small-pox. In mild cases, no medicine was necessary; at most, in such instances, some simple diaphoretic was given, sometimes with the addition of two or three grains of Dover's powder at intervals; cooling lotions applied to the face were found to be very agreeable to the patient, and were thus far of service. In the more aggravated forms of the disease, as where the eruption was very abundant and slow in maturating, a supporting, and even a stimulating treatment was pursued; many instances could be detailed to confirm the propriety of this course, by which cases the most unpromising passed safely through the attack.

Some experiments were made to test the value of the tincture of iodine, locally applied, for the prevention of pitting. Dr. Samuel Jackson of this city, formerly of Northumberland, first suggested this method to me. The tincture of iodine, prepared according to the U. S. Pharmacopœia, was applied upon the surface by means of a brush; the first application caused considerable smarting, but this soon subsided, and subsequent applications could be made with little or no discomfort.

In the experiments referred to, the tincture was used once or twice daily, commencing as soon after the appearance of the papules as possible, and continued until the pustular stage occurred; if the application was commenced after the formation of the vesicle, no good effect ensued. It was painted over one-half of the face only, in order that the appearance of the surface thus protected might be fairly compared with that of the other side; having been thus tested in a great many cases, of which thirty were carefully noted, the effects were found to be the following: the side of the face which was covered with the tincture was comparatively little swollen; the eruption was flattened, so as to be scarcely elevated above the surface, while on the other side the

vesicles first, and subsequently the pustules, were full and swollen; there was much less heat and soreness in the protected side than in the other, and much less tenderness when this side was touched; when pits were left on the unprotected side of the face, after the disengagement of the scabs, and the healing of the little ulcers thus exposed, those on the protected side were found to be less numerous and perhaps less deep; but in no instance can I certainly affirm that pitting was entirely prevented by the iodine, in cases in which there were pits upon the opposite surface.

The mild mercurial ointment, as employed by Dr. Stewardson, and to the efficacy of which he has borne his weighty testimony in the interesting paper spoken of at the commencement of this article, was used in sixteen cases. The ointment was spread upon the face directly, in some instances, in others it was smeared upon a piece of soft linen, cut so as to apply itself closely to the irregular surface; in all the cases the application was commenced before the papules began to change their character, and was continued throughout the vesicular stage. This produced effects very similar indeed to those of the tincture of iodine; but it seemed to me that the efficacy of the former in preventing swelling and tenderness was not quite so remarkable as that of the latter, and that its capability of entirely preventing pitting was not greater. The tincture of iodine is much more easily applied than the ointment, and when once laid upon the surface it remains; whereas the ointment, whether laid directly on the skin, or first spread upon linen, requires constant renewal or adjustment. In the account given of the first case of laryngitis, the reader will find a statement made of the effect of the mercurial ointment upon the development of the eruption; and in the same connection, the efficacy of simply covering the surface so as to exclude the light, and the air in a measure, is noticed.

ART. VI.—*Case of Ovarian Dropsy, with Remarks.* By E. R. PEASLEE, M. D., Prof. of Anatomy, &c., Dartmouth College.

THE following case is thought to be not devoid of interest, especially in respect to the amount of dropsical fluid drawn at each of the last three operations of paracentesis.

On the evening of August 24th, 1846, Mrs. L. S., a tall, well-formed, and uniformly healthy lady, æt. 28, and who had been married somewhat more than a year, was seized with what her more experienced female friends assured her were labour pains. She had noticed a gradual abdominal enlargement during the last six months or more; which, though the catamenia still regularly appeared, was by her friends as above, attributed to pregnancy, and now the delivery was supposed to be at hand.

The physician who attended her on this occasion, however, merely prescribed for colic, and withdrew; assuring the patient and friends that they had made a mistake as to the nature of the pains; and on the next day I was requested to see her and decide whether she were actually pregnant or not.

The abdomen was found to be already forty-two inches in circumference; the form of the enlargement was unlike that of pregnancy; fluctuation was evident; and a digital examination showed that the uterus was of the normal size, though from its height, neither could its body be well examined, nor could the ovaries be distinguished at all. It was ascertained that about a year previously, she had been attacked by a severe lancinating pain, which might be referred to the left ovary; and which, continuing several days, was followed by a tenderness of several weeks' persistence. No tumour could be detected behind the fluid on either side; nor was either side more prominent than the other.

The case was regarded as one of disease originating in the left ovary, and as extirpation was not now to be thought of, whatever may be said in its favour in the earlier stages of some cases of this disease, I merely advised friction to the abdomen with the unguent. potass. hydriodat., with a tight flannel bandage; the warm bath; much exposure to the open air, and attention to the general health; diuretics also to be used, in case the urine became diminished below the healthy standard, which had not yet been the case.

I did not again see Mrs. S., till Dec. 1847. Meantime she had applied to a large number of irregular practitioners; some of whom had made use of elaterium and other violent drastics, others had administered large quantities of calomel; and others still, the most active diuretics. By this variety and violence of medication her general health became very much deranged. Still the fluid increased at the same apparent rate, till July 27th, 1847, when being on a journey, she slipped while stepping into a carriage, and the symptoms became so imminent that Prof. Palmer, of the Vermont Med. College, at once performed the operation of paracentesis; by which thirty-four and a half pounds of fluid were removed. A large tumour extending from a point three inches above Poupart's ligament, to the same distance above the level of the umbilicus, was now found occupying the left side of the abdomen. Her general health became much better after the operation.

Dec. 3*d*, 1847, the operation was again repeated by Prof. Palmer, and sixty pounds of fluid were removed. The tumour had increased since the first operation, five months previously. Bandages and attention to the general health, now evidently failing again, were alone advised.

May 27*th*, 1848, I again saw the patient; and it being necessary to repeat the operation, I removed eighty and a half pounds of fluid at this time; the abdomen being five feet and three inches in circumference before the operation.

Oct. 4*th*. I repeated the operation, and at this time withdrew eighty-eight pounds of fluid; the abdomen before the operation being five feet and five inches in circumference.

Just fifty-six days (Nov. 29th) from the preceding operation, I found the abdomen five feet six inches in circumference, and removed by another operation eighty pounds of fluid. It was judged that at least twenty pounds more would have been obtained, had not the remainder been too viscid and stringy to flow through the canula, though a large one.

The tumour now filled the whole of the left half of the abdomen from the diaphragm to within four inches of Poupart's ligament, and terminated abruptly in a prominent edge on the mesial line. Before withdrawing the canula, the

trocar was thrust into another sac of the tumour; though but a small quantity of puriform fluid was obtained therefrom.

The patient gradually sunk, having had almost no appetite for the last two months, and expired on the 29th of Dec. last, a month after the last operation. No untoward symptoms had followed either operation, and there had been no irregularity of the bowels; no notable diminution of the quantity of urine; and no dyspnœa, except just before each operation, to the last.

Post-mortem Examination 40 hours after death.—Great emaciation; anæmia; superficial veins of abdomen and thorax enormously enlarged; circumference of abdomen five feet three inches; great anasarca of trunk and lower extremities.

Commenced by withdrawing the fluid, amounting to sixty pounds, through a canula. The tumour had enlarged antero-posteriorly since last operation; appeared solid except at a few points, where the slightest fluctuation could be detected; strongly attached to the walls of the abdomen, and being more so above than below, and terminating four inches above Poupart's ligament, it resembled an immense enlargement of the spleen, or of the left lobe of the liver, far more than an ovarian tumour.

On opening the abdomen, the sac which had contained the fluid was penetrated, and might at first have been mistaken for the cavity of the peritoneum itself, so perfectly adherent was it to the latter on its entire anterior and lateral aspects. In other words the tumour (of which the sac was a part), after pressing up beneath the diaphragm the whole mass of small intestines, the liver and stomach, at the same time carrying the diaphragm itself up to the level of the third costo-sternal articulation, had entirely obliterated the cavity of the peritoneum below the level of the transverse colon. The sac still contained a small quantity of puriform fluid, which entered through a few orifices communicating with the other parts of the tumour.

The tumour, together with the sac, was found, on removal, to weigh twenty-nine pounds. It consisted of a great number of sacs, distinct from each other, except the four or five which communicated with the large one, and varying in size from that of a pin's head to that of a cocoa nut. Of the latter size there were but two; while perhaps thirty were of the size of a hen's egg. All these sacs were of a spherical form, and filled with fluid; limpid and transparent in the smallest, and presenting every variety of colour in the larger ones, and many varieties of appearance, aqueous, oleaginous, purulent, albuminous and sanguineous. The whole mass, exclusive of the large sac, resembled in its general shape, a huge musk-melon, one-fourth of which had been removed by two longitudinal incisions meeting at its axis; one of the prominent edges thus produced, being that presenting up and down the linea alba; while the other extended to the right side, and behind the fluid. Its length was sixteen inches; its extreme diameter thirteen inches. The large intestine had been so displaced as to become curved around the tumour like an inverted U; and even the sigmoid flexure had entirely escaped its pressure, since the lower extremity of the tumour did not overlap it.

On examining the inferior, and only original connections of this mass of disease, it appeared merely an enlargement, from degeneration, of the ovary itself; each sac corresponding apparently to a Graafian vesicle or ovisac. Its pedicle consisted of the natural reduplication of the peritoneum which forms the broad ligament of the uterus, about four inches wide; enclosing a single artery not larger than the spermatic usually is, with its accompanying veins, and the Fallopian tube, slightly enlarged, and so elongated as to reach the upper extremity of the diseased mass, and behind which it lay. The ovarian

ligament became very thin at the distance of an inch from the uterus; and could not be traced more than two or three lines farther as a distinct structure.

Remarks.—We may inquire, upon what grounds any benefit can rationally be expected from cathartics, diuretics or diaphoretics, in this disease. The only original vascular connection, in this case, of the diseased part with any other part of the body, were the artery and veins before mentioned. The vessels are not in all cases so small, by any means, or so few; but it would seem we might at least, quite as reasonably expect to remove external pediculated tumours, or polypi, by the above mentioned remedies, as thus to cure ovarian disease. Still more probably might we remove the fluid of a hydrocele, by diuretics or cathartics; and yet, I am not aware that either of the diseases just mentioned, is ever treated in this way. After the enlarged organ becomes strongly adherent, it is true vascular connections are established in abundance; but then, all admit it is *too late* to expect anything from diuretics and cathartics. The opinion is here hazarded, that they are, in no stage of the disease, of any value, except so far as the particular state of the functions may indicate them, on general principles.

It has been inferred from the well authenticated (though, in any partial instance, so doubtful) efficacy of diuretics and cathartics in ascites, that they must also prove valuable in ovarian dropsy. But a very little reflection will show that the fluid is placed in entirely different relations in the two diseases. In *ascites* the fluid is separated by the mere interposition of the peritoneum from the alimentary canal—into which it may enter by endosmosis, during hydragogue and cathartic operations, and from the arteries; and above all, the veins, large as well as small, in the abdominal cavity; which latter the fluid readily permeates, if any considerable amount of aqueous fluid is previously removed from the blood by the kidneys, stimulated by a diuretic. On the other hand, in *ovarian dropsy*, the fluid is contained in a thick, dense sac; and we also find two layers of peritoneum, much thicker and changed in structure, besides the sac, interposed between the dropsical fluid and the intestines and vessels, at almost every point. This is the condition of the fluid when the disease is far advanced. But even when the fluid first begins to accumulate, and before any adhesion takes place, the tumour is covered by the peritoneum constituting the broad ligaments; and the relations are essentially the same as just specified.

Nor do frictions to the abdomen of any kind, promise any more benefit than the preceding remedies, on rational grounds, before adhesion has taken place. Do they *afterwards?* In this case, the iodide of potassium ointment was recommended, quite as much to keep the patient from more painful and injurious medication, as to promote absorption; in both respects, however, it equally failed.

The only treatment which promises any decided benefit in my opinion, if we leave all surgical procedures out of the question, or after such are no

longer admissible, is such medication as serves to improve and maintain the general health in all respects; light bandaging of the abdomen; and tapping whenever dyspnœa or suffering from pressure on any particular organ, no longer admits delaying the operation. A few cases recover after treatment, and this of various kinds. A very few recover after an accident, as a fall, causing a rupture of the sac; now and then a patient recovers spontaneously, as appears to be the case. But these are all exceptional cases; and the first mentioned are very probably as much the result of accident—as independent of treatment—as the rest. Tapping very rarely is followed by a cure.

The preceding case is somewhat remarkable for the amount of fluid removed at each of the last three times. Sir A. Cooper remarks that the* average quantity is from twenty-five to thirty-two pints; that the smallest quantity he ever removed was eight quarts; and the largest, (from an ovarian cyst,) was *twelve gallons and a half.* The quantity taken from my patient at the last three operations were 80½, 88 and 80 lbs. avoirdupois; and judging from the specific gravity of the fluid drawn by the last operation but one, there must have been at least 10¾ gallons. The other two also averaged very nearly ten gallons each. The whole amount drawn by five operations was 343 lbs. To this add 60 lbs., removed from the sac after death, and the amount is 403 lbs. or very nearly fifty gallons. The total amount might have been very much increased, doubtless, had the patient been operated on more frequently.

The number of times a patient may bear to be operated upon, if the principle of delay is entirely disregarded, is sometimes almost incredible. Four to six times is not at all uncommon. But Schmucker† operated on one patient twenty-nine times, and on another fifty-two times, in four years. Mead operated on a patient sixty-five times, in sixty-seven months; and Berard mentions a woman who was tapped 665 times in thirteen years; thus averaging, for thirteen years in succession, a tapping once in seven days, and a small fraction. I do not propose to add anything farther in this direction.

It appears, also, that eighty pounds of fluid (and probably at least sixty pounds more which could not be withdrawn) accumulated in fifty-six days (Oct. 4th, to Nov. 29th); and at least forty of the sixty pounds removed after death, were secreted by the containing sac, during the last thirty days of life. Yet during these periods, and especially the latter, the patient took almost no nutriment, and scarcely more fluid, it was believed by her nurse, than would equal the quantity of urine excreted. Emaciation was, however, very rapid during these periods; and as urea existed in the fluid, I attribute the accumulation mainly to this source.

DARTMOUTH COLLEGE,
Feb. 20th, 1849.

* Quoted by South in *Chelius' Surgery.*

† Ibid.

ART. VII.—*Effects of Chloroform as a Narcotic Agent.* By JOHN C. WARREN, M. D., Author of "Etherization; with Surgical Remarks," &c.

A SHORT time since, I received a letter from a distinguished person in Canada, in which my opinion was requested as to the state of the ether-practice and the use of chloroform. This communication led me to see the propriety of publishing some observations of a practical nature, which had occasionally presented themselves in the course of my experience. A natural reluctance to take up a subject, which, however important, had already been so hackneyed, had prevented me from executing the design, until I was repeatedly inquired of, as to the actual condition of the ether-practice. The very unfavourable influence exerted on this practice also by the fatal cases of chloroform, seemed to add to the necessity of a careful consideration of the phenomena with which they were attended. At length I received, among others, the letter already alluded to, from which the following passage is extracted.

"The use of chloroform had been just announced as your book was going to press, and you reserved your opinion on its merits, till you could speak from experience. In the interim it does not seem to me, that in this vicinity the medical profession are availing themselves generally, and with confidence of the aid of the one agent or the other, which I am at a loss to account for, and I am surprised that more has not been said of this wonderful discovery than appears to have been within the last six months. * * * I have a curiosity to know, whether as you have become more familiar with the use of ether and chloroform, your confidence in it has been confirmed, or shaken. Judging from the clear and succinct summing up at the end of your treatise, which all readers can understand, I should expect to hear, that, unless something has occurred to change your views very materially, you would scarcely think of leaving a patient to endure the pain of a severe operation without giving him at least the choice of such relief as you describe. And yet I am not sure that this is now the general practice with you; it certainly is not with us."

In the Remarks on Etherization, which I published about a year since, it was said, that another year was necessary to give us the means of judging fully and definitively on the merits of the ether-practice. Before that publication was fairly out of the press, a new agent was discovered, which was destined to effect a great change in the use of ether.

The introduction of chloroform produced an excitement scarcely less than that of the discovery of the narcotic effect of ether. The beauty of the article, and the rapidity of its influence, gave it an immediate and general currency; for not only was it employed by physicians, but the community took the narcotizing drug into their own hands, and from the highest to the lowest indulged themselves in the chloroform excitement. This substance, as proposed and promised in the remarks I had occasion to make on the subject of etherization, was taken up by me, and fairly tried in a great number of instances,

and among the first on my own person; thus giving it a thorough trial in every way. In the cases under our direction it was used with all the precautions possible. The quantity of chloroform was limited, and an inhaling apparatus commonly employed, varying in form according to the ingenuity of the contriver. The apparatus more particularly resorted to, was arranged to accomplish inhalation by the nostrils, a sponge or rag being so placed in the box as to permit the mixture of air with the narcotic vapor.

We were soon awakened from our dreams of the delightful influence of the new agent by the occurrence of unfortunate and painful consequences, which had not followed in this country on the practice of etherization. The profession were led to hesitate, many of them to suspend the use of chloroform, to watch its effects with a jealous eye, and finally, when the lapse of time produced new cases of fatality in pretty regular succession, some were induced to relinquish it entirely, and employ the safer and less violent substances, the sulphuric and chloric ethers.

The loss of a single life from an application made for the purpose of preventing pain, must make a strong impression on the mind of any conscientious physician or surgeon; and when this occurrence presents itself repeatedly within a short space of time, affording, as it must do, reason to apprehend the same result in cases otherwise the most favourable, it becomes the duty of a professional man, either to relinquish the practice, or to find out some way of rendering it safe. Now, it appears, that no less than nine well-authenticated fatal cases have presented themselves to the public eye within the space of twelve months. When we consider that there are other cases not well ascertained, and probably others which have never become public, we are called on to investigate these fatal occurrences with the greatest care, and to discover, if possible, why these patients died, while others have escaped, and whether there are any means of avoiding similar results in the future practice.

Some writers have thought, that the fatal effects in these cases did not arise from chloroform, but might be explained by other causes. And in some instances, where the fatal result has followed the use of chloroform with scarcely a longer intervention than death from a wound in the heart follows the stroke of the knife, chloroform has by learned and experienced surgeons, been pronounced to be absolutely guiltless of the mortal consequences, and the death has been attributed to fainting, or syncope; to apprehension, or fear; to bleeding at the lungs; to diseased heart and enlarged liver; to asphyxia; and finally, the well known fact, which we ourselves have formerly cited, that deaths sometimes take place from a violent constitutional impression, has been quoted as the cause. In regard to this last, if such were the true explanation, the crowding of so many cases of rare occurrence into the compass of a few months must form an epoch in the history of this constitutional sympathy.

In order to present the phenomena of the fatal cases produced by the administration of chloroform, we shall bring them together in such way, that they

may be readily compared. But before doing this, some instances may be mentioned as precursors of the formidable train of results which was to follow.

The cases which first gave me uneasiness as to the effect of chloroform were among others the following:

A lady, Mrs. H——, about forty-five years old, in good health, of rather a delicate temperament, had a tooth extracted under the use of ether in 1847, with favourable effect. In the early part of 1848, having occasion to undergo the same operation again, she applied to the same dentist, a gentleman well practiced in the use of ether. Instead of this article he thought best to employ chloroform, which was given her on a handkerchief, to the amount of about thirty drops. After five or six inspirations she had a partial convulsion, was deadly pale and faint. Being laid on the sofa she recovered in a degree, in ten or fifteen minutes became very sick at the stomach, and continued so all that day. On the day following, the sickness still remained; she had severe headache, loss of appetite, with nervous twitchings of the muscles. At the end of five days she was able to walk, and came to consult me. Her symptoms at this time were an uneasy sensation in the stomach, stricture across the chest, loss of appetite, headache, and great prostration of strength. The last symptom continued to the month of December, when she came into town again for the purpose of consulting me once more.

Not long after the occurrence of this case, we received by the *London Medical Gazette*, for Dec. 1847, an account of an instance of asphyxia and convulsions, under the influence of chloroform in Halesworth, Eng.

The writer, Mr. Beales, represents his patient as a young lady, 27 years old, who had laboured under neuralgia for three years, and from whom he extracted an upper molar tooth on the left side. A drachm was at first used, but finding slight effect, from twenty to thirty drops more were poured upon the sponge, which in two or three seconds produced rigidity of the extremities, slight convulsions of the abdominal muscles, extreme dilatation of the pupils, succeeded by the most alarming state of asphyxia, lasting for at least a minute. When reaction came on, she fell apparently into a calm sleep, during which the attempt was made to extract the tooth. But before the instrument could be removed, the jaws became so firmly fixed, as to hold it for two or three minutes, while the arms, legs, and whole body, underwent the most distorted convulsions. At length the instrument and tooth were removed, the convulsions continuing for five or six minutes longer, though with less violence. She then became half conscious, muttering, "more, more, or I cannot have my tooth out." To this state, which continued half an hour, succeeded a most excruciating pain at the top of the head, lasting twenty minutes, and it was not till the expiration of an hour and a half, that she was enabled to return home.

Within a month from this date, there appeared in the public newspapers, an account of a case of convulsions lasting sixteen hours, at New Bedford, Mass., in an apothecary, who undertook to divert his friends by an exhibition of the effects of chloroform. There also occurred in Baltimore a case of asphyxia from the same cause, continuing an hour and a half, and by which the unfortunate medical student nearly lost his life. In New York about the same time a lady, after having a tooth extracted under chloroform, lay fainting for several hours; the recovery of her mental faculties was attended with

prostration, paralysis of the tongue, and loss of voice. To these many similar instances might be added.

But these occurrences were of trifling importance, compared with others which followed. A number of individuals, in the full vigour of youth and health, were struck dead under the very hands of the surgeon raised for their relief, and in one or two instances the proposed operation was unknowingly performed on a lifeless body.

The causes of death from chloroform have naturally attracted the careful attention of physiologists and physicians. They have been anxious to discover why this article has produced many more dangerous effects than ether, and what organ was attacked with so great violence as to interrupt suddenly its functions, and consecutively the other functions of animal and organic life.

Very careful and minute investigations and discussions, intended to answer these questions, have been undertaken by learned physiologists and pathologists in various countries. My intention is not to follow in the search so ably pursued elsewhere by others, but to endeavour to throw some light on these critical inquiries, by bringing together in a comparative view, the most remarkable phenomena these fatal cases have presented, in order to ascertain, whether they agree in any one or more circumstances, which may offer a clue to the peculiar effects of chloroform, and the means of obviating them. To attain this object it was necessary to place in one view the most remarkable phenomena in each case, and then to compare them by constructing a table.

NAME.—Hannah Greener.
DATE.—January 25th, 1848.
DISEASE.—Onychia.
PREVIOUS USE.—Sulphuric ether two months previous.
TIME OF INHALATION.—About half a minute.
QUANTITY CONSUMED.—About a drachm.
POSTURE.—Sitting.
LAPSE OF TIME TILL DEATH.—Two minutes.
SYMPTOMS.—In half a minute no change of breathing, or alteration of pulse; arm rigid; insensibility; after semilunar incision, a twitch; sudden blanching of lips; spluttering at the mouth; not the slightest attempt at a rally; death.
MORBID APPEARANCES.—*Brain.*—External and internal congestion more than usual; rather more than usual quantity of serum in ventricles.
Heart.—Healthy; dark fluid in both cavities; less in left.
Lungs.—Not collapsed; one or two slight adhesions; external surface of both highly congested, mottled with deep purple, bluish, and scarlet patches; crepitant; small emphysematous bubbles along outer and interior border of both, more on upper lobe of left; bloody froth in tissue, and in bronchi; epiglottis reddened; also mucous membrane of larynx, and mottled; dark mucus in the sinuses.
Liver, kidneys, and spleen, congested. Digestive organs healthy.
Some veins more distinct than usual. Rigidity as usual.
CAUSE OF DEATH ASSIGNED BY JURY.—Congestion of the lungs produced by chloroform.

NAME.—Arthur Walker.
DATE.—Feb. 5th, 1848.
DISEASE.—None.
PREVIOUS USE.—Frequent.
TIME OF INHALATION.—Unknown.
QUANTITY CONSUMED.—About half an ounce.
POSTURE.—Leaning forward.
LAPSE OF TIME TILL DEATH.—Uncertain.
SYMPTOMS.—Not known.
MORBID APPEARANCES.—*Brain*, veins on the upper surface full, not turgid; pia mater injected; puncta vasculosa larger than usual; velum interpositum and choroid plexus much loaded with dark-coloured blood.
Lungs.—Turgid; loaded with dark-coloured blood, particularly at the upper margin of the lowest lobe of right lung; lower lobe of left and smaller portion of upper lobe of right engorged, of apoplectic character, emphysematous.
Heart.—Old adhesions of pericardium; right side distended with thin and dark fluid blood; walls of right ventricle unusually thin; cavity enlarged.
Blood.—General mass darker than usual.
CAUSE OF DEATH ASSIGNED BY JURY.—Asphyxia consequent on the inhalation of chloroform.

NAME.—Mrs. Martha G. Simmons.
DATE.—Feb. 23d, 1848.
DISEASE.—Extraction of the stumps of teeth.
PREVIOUS USE.—None.
TIME OF INHALATION.—About a minute.
QUANTITY CONSUMED.—?
POSTURE.—Sitting.
LAPSE OF TIME TILL DEATH.—Estimated by two witnesses at about two minutes; by the dentists, from five to ten.
SYMPTOMS.—Face pale, during inhalation; groans during extraction, but no other sign of consciousness. In two minutes from beginning of inhalation, head turned to one side; arm slightly rigid; body drawn backward; pulse feeble, and instantly stopped, so with respiration; face previously pale, now livid; lower jaw dropped; tongue projected at one corner of the mouth; arms perfectly relaxed.
MORBID APPEARANCES.—*Brain.*—Integuments contained but little blood; more than usual in vessels of dura mater; superficial vessels moderately distended; from sinuses of dura mater, two or three ounces of fluid blood, mixed with bubbles of air; aspect, character, and colour, normal.
Heart.—Flaccid, cavities empty, inner surface of all deeply stained; six drachms of bloody serum in pericardium; aorta and pulmonary artery empty; cava empty in chest, containing very little in abdomen; lining membrane of all blood-vessels deeply stained.
Lungs.—Considerable congestion, crepitant, no extravasation; congestion of lining membrane of bronchi; deeply stained; great injection of pleura; six drachms bloody serum in right, two ounces in left.
Liver.—Pale. Kidneys engorged.
Blood.—Everywhere fluid as water; no coagulum in any vessel; examined by the microscope; some alteration in the form of globules, some irregular; generally seem more distended and globular than normal, also somewhat fragmentary; number somewhat diminished; colour dark venous.

NAME.—Patrick Coyle.
DATE.—March, 1848.
DISEASE.—Fistula.
PREVIOUS USE.—Once.
TIME OF INHALATION.—About one minute.
QUANTITY CONSUMED.—About thirty drops.
POSTURE.—Upon the side.
LAPSE OF TIME TILL DEATH.—About one minute.
SYMPTOMS.—Showed signs of pain by putting hand to the part; in a moment his pulse, which was full and natural, sunk; death.
MORBID APPEARANCES.—*Brain*, with membranes natural and healthy.
Heart.—Enlarged, pale, soft; two or three ounces of serum in pericardium; blood-vessels with dark fluid blood.
Lungs.—Studded with tubercles; abscess in each; lower parts congested; pleura extensively adherent.
Stomach.—Mucous membrane softened, its veins turgid.
CAUSE OF DEATH ASSIGNED.—Disease of the lungs.

NAME.—Mdlle. Stock.
DATE.—June, 1848.
DISEASE.—Opening an abscess in the hip.
PREVIOUS USE.—None.
TIME OF INHALATION.—Less than one minute.
QUANTITY CONSUMED.—From fifteen to twenty drops.
POSTURE.—Sitting.
LAPSE OF TIME TILL DEATH.—Very brief.
SYMPTOMS.—After several inspirations tried to withdraw handkerchief, crying, "I choke!" face suddenly pale; countenance changed; breathing embarrassed; foam at the mouth.
MORBID APPEARANCES.—*Brain:* Superior longitudinal sinus empty; veins on convex surface not engorged, but the column of blood broken at intervals with bubbles of gas; also air in veins at base of skull; also escaped with the blood from ophthalmic veins, cavernous sinuses and inferior cerebral veins; serum in lateral ventricles moderate; substance firm.
Heart: Serum in pleura and pericardium; heart excessively flaccid; right and left cavities empty; not the smallest clot; frothy blood in the orifice of ascending cava; a little blood mixed with air from pulmonary veins; internal membrane of heart red, especially of right cavities; tissue pale.
Lungs, especially left, voluminous, visibly engorged in lower lobes; on incision, a very black fluid blood; remarkable crepitation; pulmonary vesicles dilated with air, probably from the artificial respiration; neither interlobular nor subpleural emphysena; tracheal mucous membrane bright red; no froth in bronchi.
Liver very large; air bubbles, with much black and fluid blood, escape on incision; intestines distended with fœtid gas; spleen softened, gorged with blood, bubbles of air escape on pressure.
Blood, as black as ink; air bubbles up from a remarkably black and very fluid blood from internal saphena and left crural; blood-vessels near the wound found to be perfectly entire.
CAUSE OF DEATH ASSIGNED.—Syncope, caused by sudden suspension of the cerebral functions under chloroform.

NAME.—Daniel Schlyg.

Date.—June 25th, 1848.
Disease.—Disarticulation of thigh.
Previous Use.—None.
Time of Inhalation.—Four or five minutes.
Quantity Consumed.—Not stated.
Posture.—Recumbent.
Lapse of Time till Death.—Three quarters of an hour.
Symptoms.—Face very pale, lips discoloured, pupils dilated, eyeballs rolled upwards, respiration infrequent and sighing, pulse no longer perceptible, limbs perfectly relaxed.
Morbid Appearances.—No autopsy was made.
Cause of Death assigned by the surgeon, M. Robert.—Syncope.

Name.—Walter S. Badger, gentleman.
Date.—June 30th, 1848.
Disease.—Operation on teeth.
Previous Use.—None.
Time of Inhalation.—One minute.
Quantity Consumed.—A drachm and a half.
Posture.—Sitting.
Lapse of Time till Death.—One minute.
Symptoms.—Face livid, pupils dilated, temperature of the body lower than natural.
Morbid Appearances.—*Brain,* nothing abnormal, slight congestion of corpora striata and optic thalami; membranes congested.
Chest: Lungs and heart pushed up as far as third and fourth ribs; lungs healthy; crepitant throughout; some adhesions; on right little congestion.
Heart, pale, flaccid; not hypertrophied or dilated; some adipose spots on surface; walls of left ventricle thinner than usual; fatty degeneration of tissue, especially at apex; clots of dark grumous blood in both ventricles; inner surface of aorta rough; mitral valves unequal at their edges; tissue hard, grating.
Abdomen: Omentum fatty; stomach not distended; liver very large, reaching up to third and fourth ribs; pale, brownish, dirty white; weight, eight pounds.
Cause of Death assigned by Jury.—Obstruction to the heart's action from an enlarged liver, and the influence of chloroform thereupon.

Name.—A young woman of Hyderabad.
Date.—July 11th, 1848.
Disease.—Amputation of middle joint of middle finger of left hand.
Previous Use.—None.
Time of Inhalation.—Very brief.
Quantity Consumed.—A drachm.
Posture.—Sitting.
Lapse of Time till Death.—Instantaneous.
Symptoms.—Slight cough, with a few brief convulsive movements.
Morbid Appearances.—No autopsy was made.

Name.—John Griffith.
Date.—January 19th, 1849.
Disease.—Chancres and hemorrhoids.

Previous Use.—Chloroform on December 26th, 1848.
Time of Inhalation.—None given.
Quantity Consumed.—About three drachms.
Posture.—Lying on one side.
Lapse of Time till Death.—About ten minutes.
Symptoms.—Face and neck of a livid, leaden hue; the eyes turned upwards; the pulse imperceptible at the wrist; respiration laborious; the whole body relaxed; after two or three gasps he ceased to breathe.
Morbid Appearances.—*Brain*, healthy; no other appearances than in persons dying when in full health.
Heart, large; its ventricles and auricles empty; its condition flabby; the substance of the left ventricle rather softer than natural.
Lungs, a good deal congested, and discharged, when cut, a large quantity of bloody serum.
About half an ounce of a watery fluid was found in the pericardium.

In a Review in the *London Medical Gazette*, for Sept. 1848, page 424, a quotation is made from "Remarks on the employment of Anæsthetic Agents in Midwifery," by G. T. Grean, in which he says:—"For they should know that fatal consequences have ensued from the use of chloroform during parturition."

We have thought it right to mention this statement; but as there is uncertainty about it, it should not be considered in the present state of our information as a well authenticated statement of death from chloroform. It seems a little remarkable, that in these cases, and also in some others mentioned above, in which it could scarcely be doubted that chloroform was the cause of death, that no examination of the dead body was made, or at least none reported.

M. Malgaigne, in the Proceedings of the French Academy of Medicine for Oct. 31st, 1848 (Vide *Gaz. Méd. de Paris*, Nov. 18), reports a case as follows:

"A man wounded in June, had the neck of the humerus broken by a ball, which was lost in the flesh. Two abscesses formed, and were opened without discovery of the ball. Finally gangrene appeared in the wound, and the patient was sinking under secondary hemorrhage. Having at length decided to attempt the scapulo-humeral disarticulation, with scarcely any hope of saving him, but rather to prevent him from dying of hemorrhage, the patient was put to sleep by chloroform. He aroused after the operation, but the search for the ball, which had been split in two against the scapula and buried in the walls of the thorax, requiring another incision, chloroform was again applied to the nostrils, and the incision commenced upon the living, was finished upon the dead body. His condition was so desperate that I could not, for an instant, attribute his death to chloroform; and there is no surgeon who in similar circumstances, has not had the grief to see patients die under his hands."

The following case is one of so recent occurrence, that I am induced to give it at length.

"John Griffith, an Irishman, aged 31 years, a seaman in the Navy, who was admitted into the N. Y. Hospital early in December, on his return from

Mexico, suffering with diarrhœa, chancres and hemorrhoids, died from the administration of chloroform on Saturday, while undergoing an operation. A coroner's jury so declared, adding that the use of it was proper and justifiable in the case. The affidavit of Dr. Buck tells the whole story:

"Gurdon Buck, Jr., Attending Surgeon to the New York Hospital, being sworn, says, 'that on or about the 26th December I advised that chloroform should be administered to the deceased, for the purpose of examining the condition of the rectum, the parts being in a state of such excessive irritability, as scarcely to admit of a separation of the nates. The patient recovered from the effects of the chloroform, and remained in all respects in the same condition as before its use. On the 19th of January, the deceased being in a sound condition, except the local ailments spoken of, and he having never complained of either his head or his chest; and not having suffered from the first administration of chloroform, I directed it to be administered to him for the purpose of performing an operation upon the rectum, and the operation of circumcision to remove a phymosis, caused by the chancres; the patient soon became excited by the chloroform, as is usually the case; but not beyond a degree which I have often observed. Shortly after he became more tranquil, the deceased was placed upon his side, and the operation performed, which consisted in the removal of two external tumours, and the tying of one internal tumour.

"'At this moment my attention was arrested by my assistant calling for a wet cloth. On examining the patient, I found his face and neck of a livid leaden hue, or colour, the eyes turned upwards, the pulse imperceptible at the wrist, and the whole body relaxed; after two or three gasps, he ceased to breathe. Every means was promptly used to restore the deceased, but without effect. The chloroform was obtained at Kent's, 91 John Street, and not exceeding three drachms was administered from a napkin; a portion of chloroform from the same phial had been administered the day before, to a patient without any unfavourable effects. About ten minutes elapsed from the commencement of its administration before death took place. On making a post-mortem examination, twenty-four hours after death, I found the face less livid than before death; on examining the head, the brain and its membranes presented no other appearances than are seen in persons dying when in full health. The lungs were a good deal congested, and discharged, when cut, a large quantity of bloody serum; the heart was large, its ventricles and auricles were empty, its condition flabby; the substance of the left ventricle rather softer than natural. About half an ounce of watery fluid was found in the pericardium. The viscera of the abdomen were healthy.

"'GURDON BUCK M. D.,
"'*Surgeon to New York Hospital.*'"

Drs. Kearney Rodgers, Buel and Bathgate testified to the proper use of the chloroform. Dr. R. has seen it used a hundred times without any bad effects.

Dr. Parker, Professor of Surgery in New York, to whom I had written on the subject, gave me a statement confirmatory of the deposition of Dr. Buck.

The following table exhibits the most remarkable phenomena, in the nine fatal cases noticed above, and will be useful in enabling us to compare them.

Name.	Date.	Disease.	Prev. Use.	Time of Inhalation.	Quantity consumed.	Posture.	Lapse till death.
Hannah Greener.	Jan. 25, 1848.	Onychia.	Sulphuric ether two months previous.	About half a minute.	About a drachm.	Sitting.	Two minutes.
Arthur Walker.	Feb. 5, 1848.	None.	Frequent.	Unknown.	About ℥ss.	Leaning forward.	Uncertain.
Mrs. Martha G. Simmons.	Feb. 23, 1848.	Extraction of the stumps of teeth.	None.	About a minute.	?	Sitting.	By two witnesses estimated at two minutes; by the dentists at from five to ten.
Patrick Coyle.	March 1848.	Fistula.	Once.	About one minute.	About thirty drops.	Upon the side.	About one minute.
Daniel Schlyg.	June 25, 1848.	Disarticulation of the thigh.	None.	Four or five minutes.	Not stated.	Recumbent.	Three quarters of an hour.

Symptoms.	Morbid Appearances.	Cause of death assigned.
In half a minute no change of breathing or alteration of pulse; arm rigid; insensibility; after semilunar incision a twitch; sudden blanching of lips; spluttering at the mouth; not the slightest attempt at a rally; death.	*Brain*—external and internal congestion more than usual; rather more than the usual quantity of serum in ventricles. *Heart*—healthy, dark fluid in both cavities, less in left. *Lungs*—not collapsed; one or two slight adhesions; external surface of both highly congested; mottled with deep purple, bluish and scarlet patches, crepitant; small emphysematous bubbles along outer and interior border of both, more on upper lobe of left; bloody froth in tissue and in bronchi; epiglottis reddened; also mucous membrane of larynx, and mottled; dark mucus in sinuses; liver, kidneys, and spleen congested; digestive organs healthy; some veins more distinct than usual; rigidity as usual.	Congestion of the lungs produced by chloroform.
Unknown.	*Brain*—veins on the upper surface full, not turbid; pia mater injected; puncta vasculosa larger than usual; velum interpositum and choroid plexus much loaded with dark-coloured blood. *Lungs*—turgid; loaded with dark-coloured blood, particularly at the upper margin of lowest lobe of right lung; lower lobe of left, and smaller portion of upper lobe of right engorged, of apoplectic character; emphysematous. *Heart*—old adhesions of pericardium; right side distended with thin and dark fluid blood; walls of right ventricle unusually thin; cavity enlarged. *Blood*—general mass darker than usual.	Asphyxia consequent on the inhalation of chloroform.
Face pale during inhalation, groans during extraction, but no other sign of consciousness. In two minutes from beginning of inhalation head turned to one side; arm slightly rigid; body drawn backward; pulse feeble and instantly stopped; so with respiration; face previously pale, now livid; lower jaw dropped; tongue projected at one corner of the mouth; arms perfectly relaxed.	*Brain*—integuments contained but little blood; more than usual in vessels of dura mater; superficial vessels moderately distended; from sinuses of dura mater, two or three ounces of fluid blood mixed with bubbles of air; aspect, character, and colour normal. *Heart*—flaccid, cavities empty, inner surface of all deeply stained; six drachms of bloody serum in pericardium; aorta and pulmonary artery empty; cava empty in chest, containing very little in abdomen; lining membrane of all blood-vessels deeply stained. *Lungs*—considerable congestion; crepitant, no extravasation; congestion of lining membrane of bronchi; deeply stained; great injection of pleura; six drachms of bloody serum in right, two ounces in left. *Liver*—pale. *Kidneys*—engorged. *Blood*—everywhere fluid as water; no coagulum in any vessel; examined by the microscope, some alteration in the form of the globules; some irregular, generally seem more distended and globular than normal, also somewhat fragmentary; number diminished; colour dark venous.	
Signs of pain by putting hand to the part; in a moment his pulse, which was full and natural, sunk; death.	*Brain*—with membranes natural and healthy. *Heart*—enlarged, pale, soft; two or three ounces of serum in pericardium; blood-vessels with dark fluid blood. *Lungs*—studded with tubercles; abscess in each; lower parts congested; pleura extensively adherent. *Stomach*—mucous membrane softened, its veins turgid.	Disease of the lungs.
Face very pale, lips discoloured, pupils dilated, eyeballs rolled upwards, respiration unfrequent and sighing, pulse no longer perceptible, limbs perfectly relaxed.	No autopsy was made.	Syncope.

Name.	Date.	Disease.	Prev. Use.	Time of Inhalation.	Quantity consumed.	Posture.	Lapse till death.
M'lle Stock.	June 1848.	Opening an abscess in hip.	None.	Less than one minute.	From 15 to 20 drops.	Sitting.	Very brief.
Walter S. Badger.	June 30, 1848.	Operation on teeth.	None.	One minute.	A drachm and a half.	Sitting.	One minute.
A young woman of Hyderabad.	July 11, 1848.	Amputation of middle joint of middle finger of left hand.	None.	Very brief	A drachm.	Sitting.	Instantaneous.
John Griffiths.	Jan. 19, 1849.	Chancres and hemorrhoids.	Chloroform on Dec. 26th.	Not given.	About three drachms.	Lying on one side.	About ten minutes.

Symptoms.	Morbid Appearances.	Cause of death assigned.
After several inspirations tried to withdraw handkerchief, crying, 'I choke;' face suddenly pale; countenance changed; breathing embarrassed; foam at the mouth.	*Brain*—superior longitudinal sinus empty; veins on convex surface not engorged, but the column of blood broken at intervals with bubbles of gas; also air in veins at base of skull, also escaped with blood from ophthalmic veins; serum in lateral ventricles moderate; substance firm. *Heart*—serum in pleura and pericardium; heart excessively flaccid; right and left cavities empty; not the smallest clot; frothy blood in the orifice of ascending cava; a little blood mixed with air from pulmonary veins; internal membrane of heart red, especially of right cavities; tissue pale. *Lungs*—especially left, voluminous, visibly engorged in lower lobes; on incision a very black fluid blood; remarkable crepitation; pulmonary vesicles dilated with air, probably from the artificial respiration; neither interlobular nor subpleural emphysema; tracheal mucous membrane bright red; no froth in bronchi. *Liver*—very large; air-bubbles, with much black and fluid blood, escape on incision. *Intestines*—distended with fœtid gas; spleen soft, and gorged with blood, bubbles of air escape on pressure. *Blood*—as black as ink; air bubbles up from a remarkably black and very fluid blood from internal saphena and left crural; blood-vessels near the wound found to be perfectly entire.	Syncope caused by sudden suspension of the cerebral functions under chloroform.
Face livid, pupils dilated, temperature of the body lower than usual.	*Brain*—nothing abnormal, slight congestion of corpora striata and optic thalami; membranes congested. *Chest*—lungs and heart pushed up as far as third and fourth ribs; lungs healthy, crepitant throughout; some adhesions; on right, little congestion. *Heart*—pale, flaccid, not hypertrophied or dilated; some adipose spots on surface; walls of left ventricle thinner than usual; fatty degeneration of tissue, especially at apex; clots of dark grumous blood in both ventricles; inner surface of aorta rough; mitral valves unequal at their edges; tissue hard, grating. *Abdomen*—omentum fatty; stomach not distended; liver very large, reaching up to third and fourth ribs; pale, brownish, dirty white; weight eight pounds.	Obstruction to the heart's action from an enlarged liver, and the influence of chloroform thereupon.
Slight cough with a few brief convulsive movements.	No autopsy.	
Face and neck of a livid leaden hue; the eyes turned upwards; the pulse imperceptible at the wrist; respiration laborious; the whole body relaxed; after two or three gasps he ceased to breathe.	*Brain*—healthy, no other appearances than in persons dying when in full health. *Heart*—large, its ventricles and auricles empty; its condition flabby, the substance of the left ventricle rather softer than natural. *Lungs*—a good deal congested, and discharged when cut; a large quantity of bloody serum. About half an ounce of a watery fluid was found in the pericardium.	

By the above table we learn the

TIME OF INHALATION to have been—
About a minute in 3;
Less than a minute 3;
Four or five minutes 1;
Uncertain 2.

QUANTITY.
Half a drachm and under 2;
A drachm, but less than two, 3;
Between two and three 1;
Uncertain 3.

POSTURE.
Sitting 5;
Leaning forwards 1;
Recumbent 3.

LAPSE TILL DEATH.
Within one minute 4;
Within two minutes 2;
In ten minutes 1;
In three-fourths of an hour 1;
Uncertain 1.

MORBID APPEARANCES.
Not given 2.

BRAIN.—Congestion moderate 4;
" none 3.

HEART.—Healthy 1;
Enlarged and soft 2;
Disordered 1;
Excessively flaccid 1;
Flaccid 1;
Flaccid, compressed by liver, 1.

LUNGS.—Congestion great 3;
" considerable 3;
" little 1.

BLOOD.—Dark and fluid 2;
Darker than usual 1;
Dark, venous, fluid as water 1;
Black as ink 1;
Not stated 2.

AIR IN THE VEINS mentioned in 2.

In considering what organ might be principally affected by the deleterious agent in producing the fatal symptoms, my first impression was that the lungs were primarily disordered, and that death arose from non-oxygenation of the blood. The suspended or struggling respiration, purple color of the skin, irregularity of the pulse, muscular spasms, &c., led to this opinion. If it were the fact, we should find great engorgement of the lungs, of the right side of the heart, and probably also of the brain. Now, as to the lungs, we

find them engorged more or less in every case, but excessively engorged only in three. And, on the whole, they do not present the degree of engorgement which accompanies asphyxia. The same may be said of the heart. As to the brain, the accumulation in its vascular system has been found to be very moderate. There does not then appear to be any morbid change uniformly exhibited in either of these organs, which authorizes us to consider the disturbance of such organ to be the immediate cause of death.

The facts which we have collected and compared, while they do not support the doctrine, that death occurs from a visible alteration in any of these great organs, seem to leave us only the nervous system, independent of vascular action or congestion, as the seat of the sudden change produced by the rapid passage of the narcotic principle to the great nervous centres. This is indeed to be considered a mere hypothesis at present; but as the object of these remarks is altogether of a practical nature, I shall not undertake to examine the subject physiologically, in order to prove the truth of this hypothesis.

In a large part of the fatal cases, one fact at least is conspicuous, and that is the suddenness with which the fatal phenomena occurred. In four cases death took place within a minute, in two in two minutes, and in my patient, Mrs. H., five inspirations, requiring a few seconds only, produced symptoms which lasted a long time. When we compare these sudden effects of chloroform with those from its long continued use in many cases of prolonged operations, it seems quite clear that the fatal issue is not a consequence of the quantity inhaled, nor yet of the time, but rather of the instantaneous violence of the impression.

An important objection to chloroform is the facility with which it may be abused. The highly concentrated state of the toxic principle, the convenience with which the substance may be transported, the absence of the penetrating and diffusible property of sulphuric ether, favour its use in an undiscoverable manner. Hence it has happened, that many persons of both sexes, and of all ages, have resorted to it for the purpose of obtaining the pleasure of a temporary delirium. The number of individuals whom I have known to use it in this way is so considerable, as to lead me to believe that those who employ it in secrecy must be very great. Persons, therefore, who recommend chloroform for the purpose of preventing pain, or procuring a transient pleasure, must take into view the probability, that the patient will resort to it afterwards without medical advice, that the habit of taking it may be thus formed, and origin given to the most pernicious consequences.

While these proof sheets were correcting, the following fatal case of chloroform occurred in Boston, which fully confirms the apprehensions expressed above.

This case occurred on March 6th or 7th. The following were the circumstances. A young woman, 17 years old, finely constituted, living as a domestic in a highly respectable family, being troubled with toothache and occasionally with pain in the side, having applied for medical advice was

recommended to use chloroform. She got into the habit of employing it, from time to time, for very slight causes. On the evening of the 6th of March she went out, and having had toothache used chloroform. After her return home she ate a good supper and soon went to bed. Half an hour after, a young woman, who lodged in the same chamber with her, went to her room, and on entering, spoke to her; but receiving no answer presumed she was asleep, said no more and went to bed herself. The next morning when she arose, finding that the other was not stirring, she did not attempt to rouse her, but dressed and went about her business. The patient not appearing, her room was visited and she was discovered in bed lifeless and cold. She lay on her left side with the knees drawn up, and all the limbs in a rigid state. Dr. Jeffries was immediately sent for and very soon arrived. On viewing the appearance of the patient he perceived the left hand clenched over the mouth and the right arm crossing the left. On examining the left hand a handkerchief was discovered crowded in its hollow, which being removed the fetid odour of stale chloroform was perceived. Suspicion being excited, search was made around the room and drawers for a bottle containing the suspected liquid, but none was discovered. Afterwards, when the body was moved, a bottle of chloroform fell out of the bed. It was a two ounce phial and about a quarter part of it had disappeared.

Dr. Jeffries proposed an examination of the body, and this being consented to, he called on Dr. J. B. S. Jackson, who performed it.

External Appearance.—The body was livid over the whole of the left side, on which she had lain. The face and neck were swelled so that the string of the night cap produced a distinct indentation. The pupils of the eyes were slightly dilated. The thyroid gland was much enlarged.

Thorax.—The lungs were collapsed. Both lungs were congested; but the congestion in the right was bright colored, while that in the left was purple. As the lungs were much collapsed the congestion could not be excessive. The heart was flaccid and empty of blood. Nothing was found in its cavities but a very small coagulum.

Head.—The brain was entirely free from congestion. There was a little water in the ventricles, but no other remarkable appearance.

Abdomen.—The stomach contained a considerable quantity of food in a semi-digested state, and the lacteals were full of chyle. There was no morbid change in the mucous coat; no appearance of poisonous substance. The intestines were in a decomposing condition, quite remarkable, considering she had been alive and on her feet the evening before. The liver was not altered. The spleen was congested and tuberculous. The left kidney was congested. The uterus exhibited a catamenial appearance.

Remarks.—The above statement was obtained from Dr. Jeffries by the writer. Dr. J. said that a minute account of the morbid appearances would soon be made public by Dr. Jackson and the phenomena reported in the fullest manner. If there is any imperfection in the history, the pressure of circumstances will, it is hoped, excuse it.

To what has been stated above it may be added, that there was reason to believe the chloroform was purchased on the evening it was taken; that it had been used during that evening, at least once before the fatal application, and that the half ounce, which had disappeared, must therefore be divided between the two applications; that there is no reason to believe that any other article

of a poisonous nature was employed. That there can be no reasonable doubt of the patient having died the evening before and died instantaneously. That she did not die from suffocation, but of the effects of chloroform. The want of time prevents any additional remarks.

An English gentleman, Mr. Carruthers, was in the habit of using chloroform for relief from the asthma. He was an expert angler, and sometimes sat till a late hour arranging his hooks, and making artificial flies. In this position he was found one morning by his servant, apparently pursuing the occupation of the evening previous; but he was soon ascertained to be dead, while upon the table lay the handkerchief and chloroform. We have not heard of a post-mortem examination in this case.

A physician in New York, who had attained some distinction, and who suffered from mental trouble, resorted to the use of chloroform so frequently, as ultimately to produce delirium, during which he committed some extraordinary acts, and finally destroyed himself.

It is true that an objection may be raised against ether on the same grounds. This had been replied to in the remarks on etherization by the fact, that the volatility of ether is so great as to reveal its use. The quantity required is also such as to make it much more difficult to conceal the employment.

A practical conclusion, then, from these cases, which seems to me unquestionable, is, that chloroform containing the narcotic principle in a highly concentrated state, like many other powerful agents in materia medica, although it may be employed in this state in some instances, yet in common practice should be used, if at all, in a diluted form.

If this fact is admitted, we are naturally led to ask, whether we shall use it thus diluted, return to sulphuric ether, or whether there are any other narcotic, or, as they have been called, anæsthetic agents, which may advantageously be substituted.

Various such substitutes have been proposed, among them are the nitrous oxide gas, as employed by Dr. Wells, other species of ether, and different articles experimented on by a number of physiologists. None of these seem well calculated to be substitutes for chloroform and sulphuric ether.

On hearing of the first fatal cases of chloroform, the thought occurred to me of giving a more thorough trial to the chloric ether of commerce. This, as is well known, is the product of the distillation of alcohol and chloride of lime. I had tried it formerly, as stated in my first publication, and now tried it a second time with great care, but without any narcotic effects.

After the preceding experiment, I tried the first portion of the product of the distillation without purification, and without mixture with the residuum, or any additional preparation. The first person to whom this was administered was a patient of Dr. J. Mason Warren, suspected to have a stone in the bladder, who had been so very irritable, that it was impossible to sound him satisfactorily. He inhaled freely from a sponge, in about four minutes went to

sleep; the sound was at once introduced without any trouble, and a stone detected. Under the influence of the same preparation the lithotritic operation was performed, and after two or three applications the stone was removed. In four or five other cases of stone, one of them an oxalate of lime case, in which the calculus was very refractory, the patients were conducted safely and successfully through the lithotritic treatment, under the influence of chloric ether by the same operator.

Among the subsequent cases in which this ether has been employed, I will only mention a single class, with a couple of interesting illustrations. The admirable effect of sulphuric ether in enabling us to break down the adhesions in joints stiffened by inflammation from fracture, and other causes, has been stated in the Remarks on Etherization. Chloric ether has been used a great number of times for the same purpose, and with results equally favourable. About the beginning of February, 1849, a young lady who had fallen on the ice three weeks before, and broken the olecranon process of the ulna, was brought to me by her parents, with a stiff elbow. Various efforts were made to move the fore on the upper arm, but the patient expressed so much pain, it seemed necessary to desist. As she had not been allowed to move the arm at all, I recommended her to go home, and bend the arm, or have it bent every day, and thus to increase the motion as much as possible, and if she found that nothing was gained to come to me again in five days. At the end of the time indicated she was brought, and I found that nothing had been accomplished in moving the joint. She was then etherized by Dr. Mason Warren to the point of physical insensibility, and I attempted to restore the natural motions of the arm by force. It was, however, impossible for me to accomplish this. She was therefore etherized with the chloric ether two minutes longer, fell asleep, and then renewing my efforts, the adhesions and muscular contractions gave way with an audible crack. Two other etherizations were required to accomplish the restoration of the perfect movements of the limb.

A patient of mine, who had apparently undergone inflammation of the spinal marrow with phenomena very curious, but which cannot properly be mentioned here, on recovering was found to have a false anchylosis in the right hip, a true anchylosis with dislocation in the left. Under the use of chloric ether the anchylosis in the right hip was broken with a very loud crack. The left could not be at all moved. It was therefore resolved, in order to give him a fair trial, to employ pullies for breaking down the anchylosis, and reducing the dislocation. He was bled nearly a pint, then, having used chloric ether many times before with excellent effect, it was employed; but the state of susceptibility was so altered, that both sulphuric ether and diluted chloroform were tried, the administration requiring nearly three quarters of an hour before he was narcotized. The pullies were applied for fifteen minutes, during which one of the cords was snapped and replaced. Efforts to move the limb were then made, but without accomplishing any motion of the os femoris on the os innominatum. The patient was then roused from his state of etherization, and recovered almost imme-

diately. On the day following he experienced some pain in the right hip, which I had moved during etherization, but the force applied to the left had not produced any pain or soreness. This happy immunity is to be attributed, I think, to the precursory bleeding.

The first of these trials of chloric ether was in March, 1848; between that time and the month of May, (when I mentioned the subject to the American Medical Association,) the strong chloric ether was used in fifty cases with perfect success, so far as regarded the narcotic influence, and without any unpleasant occurrence at the time, or afterwards. The experience of that term has been confirmed by the observations of ten additional months, so that I now employ it almost exclusively.

It may be objected to the strong chloric ether, *first*, that it irritates the skin, as chloroform does; *second*, that it causes nausea; *third*, that it is in fact chloroform diluted with alcohol; *fourth*, that when chloric ether is administered by a wet sponge, the alcohol combines with the water in the sponge, and leaves chloroform to be inhaled.

In answer to the first objection we should say, that it is not necessary to use this ether in such way as to irritate the skin, also that the skin is easily protected by a cloth, and by various contrivances, particularly by rubbing the face with an unctuous substance previously; *second*, that the subsequent sickness, so far from being an objection, is an advantage; for, in patients who have experienced it, the lungs are relieved from congestion, and, therefore, recover from narcotism more rapidly; *third*, the fact that it is chloroform diluted with alcohol does not form any objection to its use, since the chloroform is sufficiently diluted to render its inhalation safe; *fourth*, the supposed decomposition of the strong chloric ether, in consequence of the combination of its alcohol with the water in the moist sponge may be obviated by those who believe in such a combination, by administering the chloric ether on a handkerchief, towel, or other cloth not moistened. It is, however, probable that any portion of alcohol which combines with the water of the moist sponge being reduced to the state of rum, the exhalations would enter the lungs with the chloroform, and help to dilute its narcotic property.

It may be asked, whether chloric ether has any advantage over sulphuric. In my opinion it has. It irritates the lungs less, its inhalation is more agreeable, and it never has produced headache in the operator and bystanders, as is the case in regard to many individuals from sulphuric ether. As to the narcotic power of the two articles, there seems to be but little difference.

The distinguished Mr. Lawrence is said to have used chloric ether in the summer of 1847, but whether that of commerce, or the concentrated, I am ignorant. The idea of using this agent was suggested to me by seeing the process of preparing the chloric ether of commerce, and the chloroform by Mr. W. B. Little. Alcohol and chloride of lime being distilled together, the product of the distillation is the chloric ether of commerce; but a small quantity

of the first product of distillation is much stronger than the aggregate. Taking therefore, this first product, I made trial of it as before mentioned, and found it produced a satisfactory narcotic effect. Mr. Little has since improved the process, and prepares his chloric ether in the following manner, as he has kindly informed me by letter.

"Take the first run (that is, what passes first in distillation) when distilling chloroform, and redistil from water containing an excess of lime, which gives a perfectly pure chloric ether, free from chlorine, or any other impurity.

"We furnished Dr. Warren with different samples, until he was satisfied with the strength, and since then have uniformly made it of the same quality.

"Our 'concentrated chloric ether' contains thirty-three and one-third per cent. pure chloroform, the remainder being nearly absolute alcohol, (containing but about four or five per cent. of water.)"

After this article had been employed in a considerable number of cases, the subject was brought forward (not by me), as already stated, at the meeting of the American Medical Association at Baltimore, in 1848. Having used it myself I felt bound to give to the Association some account of its introduction, and of my reasons for using it. The President of the Association, Dr. A. H. Stevens, called on me to furnish a copy of the remarks I made, for publication in their proceedings. This I did not wish to do at that time, partly because a longer experience seemed necessary, and partly because the dangers of chloroform were not so fully established, as to exclude the suspicion that they might have arisen from a careless use of the article.

Since that time, (May 1848,) the fatal cases have more than doubled. The apprehensions grounded on these occurrences have led me to use, in preference to chloroform, the ethers, either sulphuric or chloric, and five times out of six the chloric, employing the former only for the purpose of comparison with the latter.

I have never seen, or heard, of any accident from the use of chloric ether, which gave me reason for discontinuing it; and I think I can confidently recommend it to the profession as more safe than chloroform, and more agreeable than sulphuric ether. Should any one, preferring chloroform to the ethers, feel disposed to employ this article in a diluted state, he might very properly add a certain portion of alcohol. I have used two parts of the purest alcohol with one part of chloroform; but have not sufficient experience of its effects to enable me to say that these are the best proportioned.

There are cases in which chloroform will have an advantage. We find, occasionally, instances of a want of susceptibility to the narcotic action. In such, after trying in vain the use of ether, the more powerful impressions of chloroform have been resorted to with good effect. I cannot say, however, that this has occurred in my practice more than two or three times out of a great number of cases.

To the questions contained in the letter at the beginning of this article, and to those which have been addressed to me from other quarters, I now reply in a few words, by stating, 1st, that my confidence in the beneficial effects of

ether, in surgical operations, is undiminished (but, if I were compelled to substitute chloroform, I should do so with much anxiety); 2d. Etherization is not, I think, employed so extensively as it was during the period of enthusiasm following the first inhalations of ether. The occurrence of fatal cases of chloroform has done much to cause a diminution of the use of ether; and the latter article has not been free from the charge of pernicious consequences. No fatal case from its use has transpired, however, in this country, or in Great Britain, so far as we know. One well authenticated instance only has occurred in France. The details of this case I am not able to give, further than to say, that the patient was a male, resident in Auxerre, about forty years of age, who underwent an operation for cancer of the breast, and died in ten minutes. It really seems wonderful that a greater number should not have followed the immense and ill-directed use of this powerful article.* 3d. Chloroform, or ether, is used in this part of the country in all capital operations; and, I believe, pretty generally in such operations in other parts. In parturition, also, the former is extensively employed here; but a considerable number of practitioners use it rarely, and only in cases of extreme suffering. The relief from pain is uniformly said to be great; but whether the patient does as well, on the whole, after this narcotism, is a doubtful point with me, confiding, as I do, in the power of nature to render this process generally perfect without the aid of art. In surgical operations there is every possible evidence that the chance of success is not diminished by etherization.

Means of remedying the bad effects incident to the chloroform and ether practice.—First, to use chloric or sulphuric ether, for the purpose of producing narcotism in surgical operations, in preference to any other agent; *second*, not to use narcotism for trifling operations; *third*, where the operation is not very severe and prolonged, to produce only that degree of narcotic influence which destroys the susceptibility to pain, without abolishing the intellectual function; *fourth*, to be careful that the patient does not get an exclusive inhalation of the narcotic vapour, but obtains with it a sufficient quantity of atmospheric air to carry on the oxygenation of the blood; and when he is severely affected by the first impulse of this vapour, not to press it too harshly upon him; *fifth*, when a powerful application is required, as in cases of the

* Dr. Snow, of London, one of the best writers on ether and chloroform, and a strong advocate for the latter, gives the following opinion on the supposed bad cases of ether, in the *Lond. Med. Gazette* for Nov. 1848, page 841, note.—"I am aware that ether was thought by some to have caused death in two or three instances in which the patient did not recover from the operation, but died two or three days afterwards; and, in one of these instances, a coroner's jury returned a verdict to that effect; but, I believe the only instance on record in which the inhalation of ether was fatal, was one that occurred in France (see *Gaz. Médicale*, 4 Mars, and *Med. Gaz.* p. 432, last vol.); and, in that case, the inhalation was continued without intermission for ten minutes, although alarming symptoms were present nearly all the time; and it is probable that the result was owing as much to some defect in the inhaler, which limited the supply of air, as to the effect of ether."

reduction of hip dislocation, the patient should always be bled before etherization; it is very desirable that a powerful narcotism should never be produced without previous abstraction of blood, except in cases of great debility; *sixth*, the respiration and pulse should be carefully watched during the whole operation by one in whom the operator can confide; *seventh*, when the pulse intermits, and respiration is suspended, inhalation should not be continued; *eighth*, the position of the body does not appear to exert a particularly unfavourable influence; of the fatal cases, five occurred in the sitting posture, three in the horizontal, and one in a state of flexion forwards on a table; *ninth*, whenever etherization is to be accomplished, there should be a sufficient number of assistants present to guard the patient if he should become violent; *tenth*, the exact quantity of ether inhaled has not appeared to me important. I have used it freely in a sponge or cloth, with the precaution above mentioned, of not applying it so closely as wholly to exclude atmospheric air; the fatal effects of chloroform, in almost every instance, have been produced by very small quantities; *eleventh*, to protect the face a small towel is folded in a funnel-like shape, in the apex of which is placed a sponge, double the size of an egg, charged with an ounce of chloric ether, or the liquid may be poured directly on the interior of the cloth; *twelfth*, chloroform, or ether, should not be administered in cases of epilepsy, of active organic disease of the heart, of acute affection of the lungs, or in a hemorrhagic tendency of these organs.

On the means of restoring the vital actions when suspended by chloroform or ether.—*First*, when the pulse and respiration are suspended, the face should be dashed with cold water from a sponge; *second*, a free passage of air be permitted to the patient's nostrils and mouth; *third*, inflation through one of the nostrils by an inflating tube, or, if this is not at hand, by the bellows, the opposite nostril and the mouth being closed, and the larynx pressed backwards, to prevent the air from going into the stomach; *fourth*, forced movements of the chest in imitation of respiration; *fifth*, friction of the chest, abdomen, and extremities; *sixth*, heat applied to the same parts; *seventh*, the nostrils to be stimulated with the vapour of aqua ammoniæ; *eighth*, the fauces irritated with a brush, or quill-feather, dipped in aqua ammoniæ; *ninth*, the introduction of stimulating liquids into the stomach by a gum elastic tube; *tenth*, the use of galvanism, if an apparatus can be immediately obtained; *eleventh*, inflation with oxygen gas of the nostrils and lungs; *twelfth*, inflation of the lungs through an aperture between the thyroid and cricoid cartilages; *thirteenth*, a limited application of caustic ammonia to the region of the heart; *fourteenth*, convulsions to be treated by bleeding, vapour of ammonia, cold to the head; for the sudden production of the latter, evaporation of sulphuric ether answers well.

Conclusion.—I hope it will not be thought presumptuous in me to propose the substitution of the ethers for an article which, although so deleterious to some individuals, has been, and is still extensively used with safety on others. My apology must be found in the reflection, that, for more than a year before

the introduction of chloroform, the ether-practice was carried on without any fatal result; that several fatal cases from chloroform occurred in a much shorter space of time than that above mentioned; and that a number of practitioners will feel absolutely compelled to abandon the employment of these anæsthetic agents, if chloroform be looked to as the principal; moreover, the suggestion of a judicious friend will have its weight in forming this apology. "Nor would it," he writes, "alter my opinion of the wisdom of strongly urging the objections at this time, should longer experience show, that the disasters in the use of chloroform, during the year past, arose from peculiar coincidences, and that it is, in reality, as safe as the sulphuric ether. In so grave a matter we should be willing to be proved over-cautious rather than the contrary."

Boston, *March* 1849.

Art. VIII.—*Cases of Retroversion of the Uterus, with a Description of a New Instrument for its Restoration, and some observations on the displacement of the organ.* By H. Bond, M.D. (Read before the Philadelphia College of Physicians.) With two wood-cuts.

It has not been my purpose to offer a dissertation to the College this evening, but to relate two cases, and to touch very cursorily upon some interesting topics, with the view of eliciting facts and opinions from the Fellows, who are more competent than myself to give instruction.

Case I.—Mrs. ———, aged about 31, of a feeble constitution, nervous temperament, with a very marked curvature of the dorsal spine, was confined with her second child, Sept. 29, at 8 P. M. Two hours afterwards I was sent for, and found her fainty, with a feeble pulse, produced partly by a too copious lochial discharge, although it was not more copious than is usual with many women, and partly by nervous disturbance. She was soon relieved, and got along very well, the condition of the bowels, the urination and lactation all being favourable.

Oct. 5th. When I called this morning, I learned that the patient had passed a very uncomfortable night, almost wholly deprived of sleep; that she got up and sat in a chair yesterday afternoon for the first time; that while up, in attempting to reach something at a little distance, by leaning and twisting towards one side, she felt that she had strained or injured herself, and that this was the commencement of her distress. She had great uneasiness in the uterine and inguinal regions, attended with a strong sensation of bearing down, especially when she urinated, which was done slowly, with pain and difficulty, attended sometimes with faintishness. She had no febrile symptoms, no flatulence or fulness in the region of the bladder; but the os uteri was soft and relaxed, situated high up, behind the crest of the pubis, and the fundus sunk down between the vagina and rectum so low as to rest on the perineum, and so large, apparently, as to occupy almost the whole cavity of the pelvis. I had no catheter with me; but being satisfied there was no considerable accumulation of urine, I

immediately attempted to replace the uterus by the usual manual operation, with the patient placed in the most favourable position, but without success. Although my efforts at the time gave her some pain, and I seemed to myself to have effected little or nothing as to the position of the uterus; to the patient it seemed otherwise, for she experienced a decided mitigation of the distress she had suffered since yesterday.

I visited her again in the afternoon, and found her comparatively easy. She had passed, since my morning visit, about half a pint of urine, which came more freely than it did previous to my first visit, but not without some distress and faintishness. A catheter was introduced, which passed up behind, and parallel to, the symphysis pubis, and scarcely any urine was found in the bladder. At this visit I did not renew my efforts at replacement, but directed the patient to make full trial of the effect of position, that is, a prolonged resting upon the knees and elbows, or, if she could do it, upon the upper part of the chest; and to take an opiate in the evening, if necessary. Soon after I left, she followed my directions resolutely. She placed herself upon her knees and upper part of the chest and remained in that position for an hour; was sensibly relieved thereby, and had a pretty good night's sleep without the opiate. She had some difficulty in urinating in the night.

6*th*, A. M. She had tried the position again this morning before my visit, and I found her so comfortable, that I did not think it necessary to use the catheter, or make an examination. She passed urine freely before my visit, and did not feel as if there were any more to come away. At my afternoon visit, as she had passed but little urine, and that with some uneasy sensations, the catheter was used, and very little water found. She had flooded considerably since my last visit. Upon examination I found that the large tumour between the vagina and rectum was entirely gone; there was entire relief from all the distressing symptoms with which she had been attacked forty hours previously. It is probable that the uterus returned to its normal position this morning while she was in the prescribed posture, and that this replacement allowed the uterus to be evacuated more completely, causing the increased discharge before mentioned. As the patient has some flatulence to-day, I directed an enema containing ol. ricini and ol. terebinth.

7*th*. No symptoms of retroversion, and no indications for the use of the catheter. As the enema prescribed yesterday had not operated as was designed, a copious injection (a quart) of linseed tea was directed, which operated very favourably. As the vaginal discharge is excessive and somewhat offensive to-day, injections of infusion of chamomile and sulph. alumen were prescribed with the most satisfactory effect. Also the patient was directed if there should be any symptoms of a recurrence of the retroversion, any sense of weight and bearing down, or dragging pains in the groins, to recur immediately to the position already employed. She had no recurrence of such symptoms, but a good recovery. She maintained a recumbent position longer than usual after confinement; and before she began to sit up had an abdominal supporter provided, of domestic manufacture, which she wore a very few weeks.

Case II.—The following case led to the contrivance of the instrument which I offer to the inspection of the College this evening.

Mrs. ——, aged 37, has had four children, the youngest of whom is aged about 11 years. She has subsequently had repeated abortions, but in each case originating in causes independent of any defect in her health or constitution. For several years past, her menstrual periods have recurred regularly

every three weeks, and they usually continue seven or eight days, so that she is menstruous one-third of the time; yet not one woman in five hundred has been favoured with such uninterrupted good health, and such constitutional vigour. About the end of last August, in attempting to lift a heavy body, while in a stooping position, she sustained some injury, as she said, "felt something give way" in her left side, or iliac region. She continued to have an unusual sensation in that side, but it was not one that gave much distress or inconvenience, or of which she could give a distinct account. Some time after she began to have a vaginal discharge, and on the 10th of November, I was requested to prescribe for it. She expressed her apprehension that there was ulceration of the os uteri; ocular inspection did not detect any; but there was very evident congestion of the parts. I directed a constitutional and local treatment, which had so favourable an effect, that I visited her but a few times.

On the 16th of December, in the midst of one of her menstrual periods, she was extremely imprudent in exposing herself to the effect of dampness and cold. In the evening, she became ill and passed a very distressful night. In the morning I received an early and urgent message to visit her, and found her in great distress. She had great pain and tenderness in the hypogastric region, the pain extending down into the pelvis, into the back and the groins. The whole uterus was much enlarged,—the os and cervix uteri were enlarged, smooth, hard, with a marked increase in temperature, and extremely intolerant of pressure on any part that I could reach. One circumstance in the case seemed to me very remarkable,—that with so much local distress and disorder, there should be so little constitutional disturbance. The treatment consisted of leeching repeatedly, internally and externally,—a very free use of magnes. sulph. and antimon. tart., in divided doses—fomentations—anodyne injections per anum et vaginam—anodynes internally, when the symptoms required them—restricted diet, and recumbent posture. Under this treatment, the urgent distress was soon relieved; the tenderness in the hypogastric region gradually subsided, as did also the tension, tenderness, and heat of the os uteri, and there was a sensation of softness and laxity in the parts compared with their former engorged state. But still the uterus was evidently much enlarged, and there was still a very tender spot on the left side of the cervix, extending as high up as I could reach. She continued to improve, and became so well that she was about her chamber and went down stairs. She had fecal discharges every day, but they were not sufficiently evacuant, and she was obliged, occasionally, to use laxatives. In the evening of January 13th, she took a cathartic pill. At 4 o'clock next morning she was obliged, as the effect of the pill, to get up to the chair; and while on the chair she was suddenly seized with great distress, and very peculiar sensations —pain in the groins and top of the thighs—frequent inclination to urinate, which was done with great pain and difficulty;—still greater difficulty in defecation, with a distressing pressure on the rectum. Upon examination, at an early hour in the morning, I found the pelvis almost filled up by some body, which was interposed in the cul-de-sac between the vagina and rectum, and which rested on the perineum. The os uteri was high up behind the symphysis pubis, nearly on a level with its crest, and so pressed against the bone, that it was reached not without some effort. The diagnosis was very clear that it was a complete retroversion of the enlarged uterus, which was at least four inches in length. Dr. Meigs thought it could not be much less than five inches. The immediate cause was probably an accumulation in the sigmoid flexure of the colon, which accumulation had been caused

by the enlargement of the uterus. I introduced a catheter, without delay, to ascertain if there was an accumulation of urine, but found very little. The operation was afterwards repeated as often as was necessary to be assured that there was no accumulation in the bladder. The bladder had been carried backwards with the uterus into the pelvis; for when a gum elastic catheter was carried in about six inches, the patient said she felt the instrument passing down into the pelvis.

After the introduction of the catheter, I attempted to return the uterus by placing the patient in various positions, and by applying pressure to the fundus, both per anum et per vaginam. But my varied trials accomplished nothing; the uterus seemed to be as immovable as if there had been adhesions, and it was still so tender, that pressure upon it gave the patient a good deal of uneasiness. In the afternoon of the same day (Jan. 17) I requested my friend, Dr. C. D. Meigs, greatly experienced in this class of diseases, to visit the patient, in consultation, which he did promptly; and he repeated, with a strenuous determination to conquer success, the trials which I had made, and with the same result. At subsequent visits he made repeated attempts to bring down the os uteri so low that he could introduce Professor Simpson's Sound; but he made hardly any approach towards success. He then gave the sound (made of annealed silver) a short curvature, somewhat resembling a blunt hook, with the view of using it as a hook to draw down the os uteri; but with no better success. Dr. Meigs visited the patient with me once or twice a day on the three succeeding days, and we both renewed our efforts to replace the uterus, but without any appreciable success; for the fundus still rested on the perineum. But although the uterus remained unmoved, some important changes had taken place in the condition of the patient. She could urinate without much distress, although very slowly. The pressure upon the rectum was much less distressing, and there was less difficulty in defecation. On the day the retroversion occurred, I prescribed castor oil and laxative enemata in ordinary doses. They operated a little, with very frequent efforts, attended with much distress in the sigmoid flexure and descending colon; but they did not produce free evacuations. The next morning I directed an enema of one quart of linseed tea. This had a very favourable effect. It seemed to act as a solvent to the contents of the sigmoid flexure, and procured a very copious evacuation, with comparative ease, and to the great relief of the patient. A similar enema was given with the most satisfactory effect once or twice a-day, so long as any aid was necessary to keep the bowels free, and to prevent accumulations in them.

Having used for four days without any appreciable effect, all the means in our power to replace the uterus; as the very urgent symptoms in the bladder and rectum had abated; as menstruation had supervened, and the engorgement was slowly subsiding, it was deemed advisable to suspend for the present the efforts at replacement, and Dr. M. discontinued his visits, until some change in the patient's condition should require his return. It was agreed, at the suggestion of Dr. Meigs, to introduce into the vagina a small gum elastic bag stuffed with curled hair. It was supposed that its continued gentle pressure, aided by the patient's frequently resting on her knees and elbows, and the catamenial discharge, would favour the subsidence of the engorgement, and aid any efforts of nature to restore the uterus to its normal position.

The uterus was so large and laid so low that at first only a very small gum bag could be introduced, but on each succeeding day it was found that the size of it could be very considerably increased. At the end of four days the uterus was evidently diminished, and the fundus, instead of resting on the

perineum, was crowded back into the hollow of the sacrum, and the os uteri was shoved up very high.

In one of our consultations I stated to Dr. Meigs my belief that I could contrive an instrument which would be more efficient in such a case than any of the means we had employed, or that were known to me, and explained to him the principles of it. Directions were immediately given to Messrs. Rorer and Son to construct one. The instrument was finished Jan. 25th, (five days after Dr. M. discontinued his visits,) and on the first trial of it, with great ease to the patient and to myself, I entirely replaced the uterus. The patient was so satisfied with my success, that she immediately said, "I beg you, doctor, never to use your finger again in such a case."

It is proper to observe that during the use of the gum bags I made a few attempts to replace the uterus. In an attempt just before the instrument was obtained the uterus seemed no more movable by the finger than if an adhesion had taken place between it and the surrounding parts.

After the replacement of the uterus she had not the least uneasiness or uncomfortable feeling, unless she got into an upright position or on her feet, when she experienced a sensation of weakness and uneasiness in her back and hypogastric region. The neck of the uterus was still enlarged. She had also some vaginal discharge, which was removed by using a few times a weak solution of nit. argent. I directed a recumbent posture, a copious enema of linseed tea every day, so as to avoid any straining in defecation; and, should any uneasiness occur in the uterine region resembling that she had lately experienced, to place herself immediately on her knees and elbows. At the end of a week I directed her to try an abdominal supporter. She obtained one of Mrs. Betts, which, as the patient said, acted like a charm. She could immediately sit up or walk about without any inconvenience or disagreeable sensation, and, indeed, says she has been entirely well ever since its application.

The position and size of the uterus were so nearly the same in both of these cases, that the accompanying diagram furnishes a good illustration of the relative situation of the pelvic viscera* in each. The only difference seemed to be that, in the first case, the mouth and neck of the uterus were much softer and more yielding to the touch, and did not press so firmly against the pubis; and perhaps the body of it was a little thicker and broader. An examination of the engraving will show that the attempt to replace the uterus in such cases, by pressure with the finger in the vagina, will have very little effect. It will only shove the fundus back into the hollow of

* In order to show the position of the membranes of the viscera, the artist has not re.

the sacrum. It will also show that, although the finger or thumb may be more efficient when introduced into the rectum, yet it lacks one important desideratum to ensure success, viz: sufficient length to lift the fundus above the promontory of the sacrum. It will also aid one in forming an estimate of the utility and safety of Professor Simpson's uterine sound, as a means of replacing the uterus in such cases. As I have had no experience in the use of this instrument, except to witness a trial of it in one case, perhaps it will be thought obtrusive in me to offer an opinion. Yet, after some study of its capabilities, it seems to me that in those cases of retroversion, where instrumental aid is most needed, it will be found useless; and that in those cases where it can be used, it may well be questioned whether the patient would not, in almost every case, be better without its use. Indeed, would it not be a dangerous weapon in the hands of those bold chivalric practitioners, who are determined never to be thwarted? As a mere sound, it is probable that a much lighter and more flexible instrument would be preferable.

It may be asked, do such cases often occur as that for which this instrument was contrived? As I have not made displacements of the uterus either a speciality or a hobby, and do not pretend to have enjoyed extraordinary opportunities for observation, my answer may be of little value and may pass for what it is worth. But I reply, that according to my observations and inquiries they occur very rarely. In a practice of above thirty years, I have not met with a case of retroversion in pregnancy; I have met with only one case in a puerperal patient, which is the first case contained in this paper; and with only one case unconnected with the pregnant or puerperal state, and that is the second case which I have read. Any person who will examine the various treatises on midwifery and the diseases of women, may be satisfied that the writers thereof have had extremely few or no cases of this disease in pregnant or puerperal patients. In some of them it is not noticed, and in those who do treat of it, their articles are made up of quotations, references, comments and suggestions, not of facts occurring under their own observation.* I venture to assert, with confidence, that no man of ordinary sagacity, who has had a case of retroversion in pregnancy, will afterwards recommend the following practice, which is to be found in most of the late authors, and which I quote from Dr. Dewees.

"The hand being well lubricated, should be passed into the vagina in a state of supination; the fingers retracted in such a manner as to form a straight line at their extremities; they must then be gently pressed against the base

presented the os uteri pressing against the pubis and the fundus against the rectum, as they did in both cases; and the uterus is represented of smaller dimensions than it was in either of them.

* It is but justice that I should qualify this remark by a reference to the recent publications of Dr. C. D. Meigs, viz: his "Obstetrics," his "Letters," and his Note to Colombat. In these will be found some interesting facts, and the statement that he has met with a *great number* of cases of retroversion.

as it were of the tumour, that is found in the vagina, so as to move it backwards and upwards along the hollow of the sacrum, until the mass shall reach above the promontory of this bone; when this far, the hand may be withdrawn and a pessary introduced of a proper size."

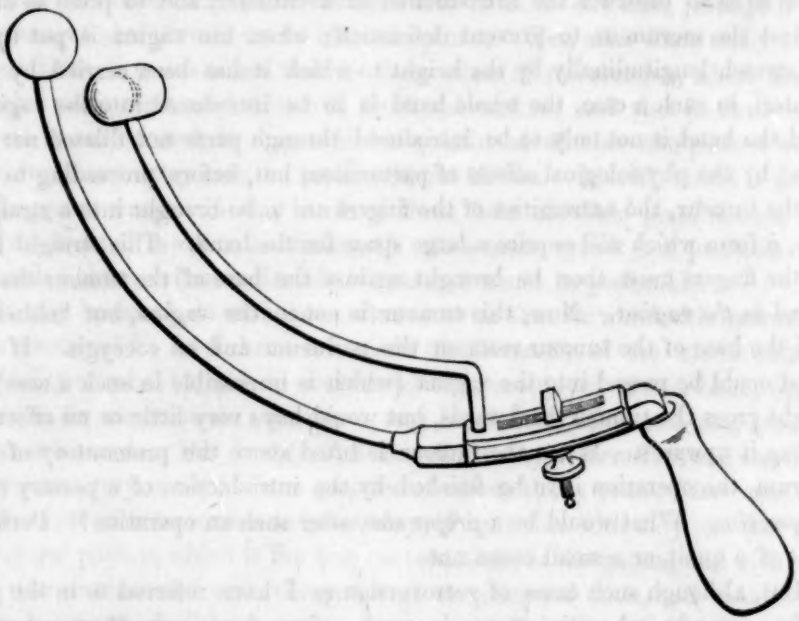
Here observe, that in a case where a tumour fills the cavity of the pelvis, where the tumour is so large as to rest on the perineum, to press against the pubis so as to obstruct the introduction of a catheter, and to press so hard against the sacrum as to prevent defecation; when the vagina is put upon the stretch longitudinally by the height to which it has been carried by the os uteri, in such a case, the whole hand is to be introduced into the vagina. And the hand is not only to be introduced through parts not dilated nor relaxed by the physiological effects of parturition, but, before proceeding to act on the tumour, the extremities of the fingers are to be brought into a straight line, a form which will require a large space for the hand. This straight line of the fingers must then be brought against the base of the tumour that is found *in the vagina*. Now, this tumour is not in the vagina, but behind it, and the base of the tumour rests on the perineum and os coccygis. If the hand could be passed into the vagina (which is impossible in such a case), it might press the tumour backwards, but would have very little or no effect in lifting it upwards. When the tumour is lifted above the promontory of the sacrum, the operation is to be finished by the introduction of a pessary of a *proper size*. What would be a *proper size*, after such an operation? Perhaps that of a quoit, or a small cocoa nut.

But, although such cases of retroversion as I have referred to in the preceding remarks, when the uterus is much enlarged, are rare, there are other displacements of it occurring much more frequently, in some of which it is probable this instrument may be found useful. I refer to those flexions and tiltings of the unenlarged (and otherwise healthy) uterus, to which some persons attach so much importance, attributing thereto numerous local and constitutional disorders, which are, as they think, to be removed by that panacea for uterine ailments, the *pessary*. Such are those cases where it is practicable to change the position of the uterus by the use of Prof. Simpson's sound. My opinion is, that most of these are cases of neuralgia, and that though they may be perhaps aggravated, they are not entirely caused by the position of the uterus, and are not to be remedied solely by replacement by mechanical means.

But, as very distressing symptoms are undoubtedly connected with, or dependent upon, the abnormal position of the uterus, it is desirable that it should be ascertained in the easiest and most certain way, whether replacement and retention in place are the proper and sole remedy. Replacement can seldom fail to be accomplished by the use of this instrument, without any probability of irritating the uterus, although it be in a pathological condition, which can scarcely be said of Prof. Simpson's sound. If the distressing symptoms have been caused by displacement, the immediate effect of replacement

will aid in determining whether it be an affection which can be cured by merely mechanical treatment, or whether the symptoms be owing to a morbid condition of the uterus and its appendages. This I regard as an important question in diagnosis, often not easily settled, which this instrument may aid in determining.

Description of the Instrument.—The instrument (see accompanying figure)



consists of two blades, the *anal* and the *vaginal*, and of a clamp-headed screw and nut to fasten them together. The anal blade has the larger curvature (a radius of about four and a half inches), has a square body three inches long, upon which the other blade slides and rests, and to it belongs the handle of the instrument. The vaginal blade has a smaller curvature (a radius of about three and a half inches), so as to make the blades parallel; has a large groove, about two inches long, exactly fitted to the square part of the other blade, so as to slide upon it, and to obtain a firm attachment by means of the screw. The groove has a fenestra through its upper side, one and a quarter inch long, wide enough to give passage to the head of the screw, when this is placed longitudinally. That part of the screw, which is within the fenestra, is square, so as to prevent its rotating when the nut is turned. The end of each blade is terminated by an ivory tip. That on the anal blade is spherical, and is about five-eighths or six-eighths of an inch in diameter. It should be as large as can be conveniently introduced. It would probably be better to have it oval, if it could be readily introduced. This difficulty may be overcome by means of a suitable speculum. The tip of the vaginal blade is oval, approaching to a cylinder with hemispherical ends, about one and a quarter inch long and five-eighths of an inch diameter. The tips are screwed on to the blades, so that they may be readily taken off and exchanged for others of a different size and shape, if desired. The distance between the tips and the junction of the blades is about six and a half inches.

In using the instrument, detach the blades from each other; introduce the

anal blade into the rectum, then the vaginal blade into the vagina; then fasten the two together by means of the screw. Be particular to keep the blades parallel with the axis of the pelvis, and never thrust them forward with inconsiderate haste. The tip of the vaginal blade can be placed higher or lower, as circumstances may require. If the fundus uteri has sunk low between the rectum and vagina, it will be best to shove up the movable blade, so that the two tips shall be nearly on a level. In this position of the tips, it is intended that the space between them shall only be sufficient for the vagina and rectum, without pressing them—a space not exceeding three-eighths of an inch. If the fundus uteri does not lie low, or if the instrument has been carried up as high as the vagina will easily admit, loosen the screw, and, without allowing the vaginal blade to retreat, carry up the anal blade in such a manner as to throw the fundus forward into its natural position. Cases may occur where it would be desirable and convenient to use either of the blades separately. Should it be found desirable to place the tips at a greater or less distance from each other, than can be done by the slide, this can readily be accomplished by placing a small wedge under either end of the sliding groove.

ART. IX.—*Extraction of a glass goblet from the Rectum—Fracture of the Penis.* Cases reported by W. S. W. RUSCHENBERGER, M. D., U. S. Navy, Fleet Surgeon for the East India Squadron. (With a wood-cut.)

WHILE recently on a visit to Canton, I derived the history of the following cases from the notes and verbal explanations of the Rev. PETER PARKER, M. D., Chief of the "Ophthalmic Hospital," &c., under whose notice they fell. Both cases seem to me so unusual, that I avail myself of Dr. Parker's consent, and submit them for publication. The first case affords us a glance at the debauchery practiced by a portion of the Chinese population about Canton.

On the records of the hospital, the case numbers 23,930. *Glass goblet extracted from the Rectum.*—In the evening of the 1st March, 1848, a young man, very respectable in appearance, solicited Dr. Parker's aid for his father, whom he had brought to the hospital. With many expressions, indicative of his sense of shame and mortification, he related that Loo, his father, then sixty years of age, had spent the preceding night in one of the "flower boats," or floating brothels on the river, with a prostitute. Under the insane excitement or intoxication produced by the combined influence of drinking spirituous liquors, and smoking opium, the lecherous sufferer, in mischievous frolic, forced a glass goblet, of the form and size indicated in the accompanying diagram, into the vagina of the companion of his sports. In the course of the night, Loo fell into

Diameter of brim, 2⅝ inches.
Height, 3⅛ inches.
Diameter of base, 1⅞ inches.

a state of unconsciousness, when the woman sought her revenge. She carefully insinuated the base of the goblet within his anus, and then placing the end of her opium-pipe—a cylinder about an inch in diameter, and a foot and a half in length—at the bottom of the goblet on the inside, suddenly pushed it into the rectum, entirely above the sphincter. Twenty-four hours had elapsed since its introduction. An angle of about a half inch of the rolled lip of the glass had been broken out by efforts made by friends to remove it.

Such was the report of the case when brought to the hospital for relief.

On examination, the glass was found firmly fixed in its position; it was very difficult to pass the extremity of the finger beyond its lip, betwixt its outside and the rectum. In Dr. Parker's opinion, it was impossible to extract it entire; and, therefore, though anticipating difficulty and danger in the operation, he determined to break it down. By means of forceps, such as used by obstetricians in breaking up the fœtal cranium, commencing on the side nearest the pubis, he broke up the goblet and extracted it piece by piece, carefully guarding the parts by folds of cotton cloth as he proceeded, and removing the small sharp fragments which fell, with a teaspoon. After the bowl, or bell portion was removed, the most difficult part of the operation remained to be performed, for the hemorrhage was free, and the base of the goblet, with the sharp points of the sessile stem, resulting from the fracture, was high up in the rectum, and firmly embraced in a transverse position. Assisted by the bearing-down of the patient, the edge of the base was reached by the point of a finger, and with difficulty turned edgewise, guarding against fractured points by pledgets; then, by pressing the smooth side, or bottom of the glass against the rectum, it was at last extracted. Remaining fragments were sought for, and the intestine thoroughly washed out. To arrest the hemorrhage, which was considerable, strong solutions of sulphate of copper, and of alum, were injected, and temporarily confined in the rectum, by pressing a sponge against the anus. For a time the bleeding ceased; but during the night, several ounces of coagulated blood were evacuated; afterwards, there was no more hemorrhage.

The operation occupied an hour and a half. An opiate was administered, and the patient placed in bed. The general treatment consisted in rest, laxatives, and light diet; the rectum was occasionally injected with tepid water, and solutions of nitrate of silver.

On the fourteenth day the case was discharged, cured.

Fracture of the Penis.—A young man, native of Canton, applied to Dr. Parker for relief. He had been married about eight months. On the nuptial night, he met with insurmountable difficulty in his attempt to establish sexual intercourse with his bride, and in an effort, on that occasion, sustained a severe, and most probably, irreparable injury, which caused great pain. Since that night, erection of the penis is limited to about a half an inch of its root, the extremity of the organ, with its glans, hanging flaccid.

On examination, a well-defined, transverse space, through the corpora cavernosa, about a half inch from the pubis, the site of fracture, was found to separate the penis into two parts.

No attempt was made to remedy this serious misfortune.

U. S. Flag Ship Plymouth, Macao, October 15th, 1848.

REVIEWS.

ART. X.—*Obstetrics. The Science and the Art.* By CHARLES D. MEIGS, M.D., Professor of Midwifery and Diseases of Women and Children in the Jefferson Medical College at Philadelphia, etc. etc. With one hundred and twenty-one illustrations. 8vo. pp. 685. Lea and Blanchard. Philadelphia, 1849.

TREATISE after treatise on the theory and practice of Midwifery have, within a few years past, issued from the press in rapid succession, each excellent in its kind, and the majority bearing the names of the most diligent cultivators, and distinguished practitioners of obstetricy. Amid these, the work of Dr. Meigs will claim a high and commanding position. As an elementary treatise—concise, but, withal clear and comprehensive—we know of no one better adapted for the use of the student; while the young practitioner will find in it a body of sound doctrine, and a series of excellent practical directions, adapted to all the conditions of the various forms of labour and their results, which he will be induced, we are persuaded, again and again to consult, and always with profit.

The work of Dr. Meigs bears all the intrinsic marks of being the production of one who has not only had ample opportunities for studying the several subjects of which he treats, but who has carefully improved those opportunities. There is an earnestness in the author's style, as of one having authority. What he describes, he has evidently seen—what he directs to be done he has himself practiced. From his very manner of teaching, we perceive that the obstetric science he inculcates has been deduced from, or verified by his own observations, and that the correctness of the rules of practice laid down by him has been tested by his own experience. This, while it constitutes in a great degree the value of the work, in relation to every point connected with the science and the art of obstetrics, renders it likewise a more pleasing one to study. The reader seems rather to be listening to the earnest, truthful and living voice of one qualified to teach, than merely perusing the dry details of doctrine and of practice from the printed pages of a book.

The foregoing remarks apply, without qualification, to all that portion of the treatise before us which treats of obstetrics properly speaking. The correctness of a few of the hypotheses advanced by the author, relative to certain physiological points, may, it is true, be disputed, and we might desire to expunge an occasional phrase of doubtful meaning presented as an explanation of physiological action. But we desire not to war with these pets of our author, they detract but little from the true value of the treatise, and can scarcely mislead in any important particular. From one, however, of his pathological doctrines, to be noticed hereafter, that, namely, in relation to the cause of cyanosis neonatorum, we must be permitted to dissent in toto. The chapter on this subject cannot but be considered as a most unhappy appendage to an otherwise most valuable work.

In his "Preliminary Observations," Dr. Meigs defines *Midwifery*—"the art of assisting women in labour,"—while *obstetricy*, he remarks, "comprises the sciences of anatomy, physiology, and pathology, as relative to the reproduc-

tive organs, and the arts of therapeutics and surgery, as applied to sexual affections in women." Hence, also, he defines "a midwife or accoucheur" to be "one who assumes the conduct of cases of labour"—while "an obstetrician is a physician, who, in addition to a general knowledge of physic and surgery adds the special information that is necessary for one having charge of all sexual affections, whether in the department of midwifery proper, or in other complaints of the sex." We confess that we do not see the necessity, nor are we prepared to acknowledge the propriety of the distinction here drawn between the midwife and obstetrician. So far as the two terms are concerned it is unquestionably altogether arbitrary. We can find nothing which leads to the supposition that the Roman *obstetrix* was in any respect superior to the Saxon *midwif*.

Dr. Meigs' treatise is divided into four parts, the first of which treats of the anatomy of the parts concerned in the acts of reproduction, their pathology and therapeutics. The pelvis with its several dimensions, planes, and axes—its mechanism, and that of labour as it depends upon the relations of the pelvis and fœtal head—the organs of generation—the structure and power of the womb, and its action in labour, are well and accurately described. All the subjects here enumerated are of vast importance to the obstetrician—an intimate acquaintance with them is essential to constitute a safe and efficient accoucheur. In his account of them the author is peculiarly happy, and he has rendered every subject, even the most complex, plain and familiar, by numerous well executed wood engravings and diagrams. The chapters that treat of the pelvis and its obstetrical relations constitute an admirable guide to the student, in acquiring a knowledge of these particulars, without which he can never qualify himself properly to conduct a labour. A very excellent account of the ovaries and their functions concludes the first part of the treatise. Dr. Meigs presents his own peculiar views of the office of the ovarian stroma and of the nature of the corpus luteum; these are so well known as to render an exposition of them here unnecessary.

The second part of the treatise is devoted to the physiology of reproduction. In regard to the nature of the menstrua, Dr. Meigs adopts the modern doctrine that the discharge is simply blood, rendered impure from the admixture of a quantity of mucus and epithelial cells. In rejecting the notion, that the menstrual discharge is a secretion from the mucous surface of the uterus, he is certainly borne out by the result of numerous recent researches. The intimate connection which exists between the development and expulsion of the ovarian ovule and the menstrual flux is clearly pointed out by our author, together with the various important deductions resulting from this relation in reference to the pathology of menstruation, and to the several stages in the life of the female. In connection with this subject a few remarks are offered upon the computation of the commencement of pregnancy, from the period of the last menstrual period. Dr. Meigs considers that few errors will be committed if we begin to count at the day following that on which the flow ceased, allowing 280 days as the usual duration of gestation.

The history of pregnancy—the changes which take place in the womb to fit it for the reception of the ovum—the formation of the placenta—the growth of the womb as the pregnancy proceeds, and the various sympathies which are awakened by the process of gestation—are all clearly and accurately delineated.

Quickening, Dr. Meigs ascribes to the embryo becoming, about the age of four months and a half, sufficiently large and strong to make its movements felt by the mother, and describes the peculiar sensations usually attributed to

the movements of the fœtus, as being produced by its thrusting with its hands and feet, or suddenly redressing its body from its usual flexed position. This explanation we have long looked upon with distrust, and were pleased to find what to us appears to be a somewhat more reasonable explanation advanced by Dr. Tyler Smith, in his lectures on the physiology of parturition.

Dr. Meigs' account of the development of the fœtus is full and explicit. His views of the structure of the placenta are somewhat different from those usually taught. He describes the fœtal aorta as dividing into two umbilical vessels, which, running outwards along the cord, subdivide at its extremity into myriads of arterioles and capillaries, which, constituting numerous tufts or branches connected together by a loose cellular tissue, is called the placenta. In the human placenta, and in those of certain quadrupeds, all these placental tufts are united into a single disc, cake or placenta; hence, adopting the opinion of Seiler and Velpeau, that the placenta is entirely fœtal, and that there exists no direct vascular connection between the fœtus and mother. The accuracy of this description will, we are persuaded, be borne out by future cautious investigations.

While Dr. Meigs sets down the ordinary duration of pregnancy as two hundred and eighty days, he maintains the possibility of its being protracted in some instances far beyond that term. He quotes the case related by Asdrubal of a thirteen months gestation, to which he gives full credit. He states also a case which fell under his own care, in which, if the statements of the female are to be relied on, the pregnancy continued near fourteen months, or four hundred and twenty days. We have ourselves seen more than one case in which, if the computation of the female, from the last appearance of the menstrual discharge, was to be depended upon, the pregnancy continued over three hundred days, but we have always believed in these cases, that some error had occurred in the reckoning, though we were not always able to detect it.

The remarks of our author upon the causes and management of abortion are particularly deserving of attention. The same remark may be made in reference to the section on retroversio uteri, in which the causes, consequences and treatment of this most important displacement of the gravid uterus, are treated with Dr. Meigs' usual ability.

A consideration of the signs of pregnancy concludes the second part. Commencing with the remark, that "The safest rule would be to suppose every married woman of the proper age, with suspension of the catamenia, while not giving suck, as pregnant, and to treat her as gravid until convinced of the contrary"—Dr. Meigs proceeds to show that the non-appearance of the menses at the regular period is no conclusive evidence of conception, and that, although there are many accidental or correlative signs which establish a probability of the existence of pregnancy, still, that the only true and infallible signs of the existence of this state are those derived from the visible, palpable or audible motions of the child. The importance of auscultation and the character of the sounds detected by it are next pointed out.

The first two parts of the treatise before us present all the preliminary knowledge, derived from anatomy and physiology, which is necessary to prepare the practitioner for the management of a case of labour; together with some account of the more prominent pathological conditions of the female generative organs and their management. From the careful perusal of this portion of the work, the student will rise with the conviction of having acquired precise and explicit views upon the several points treated of; more especially of the facts and doctrines in relation to the interesting and at the same time import-

ant subject of reproduction, for which we are indebted to numerous modern investigators. The whole illustrated, wherever this was possible, by beautifully executed engravings and diagrams.

The third part of the treatise is devoted to the consideration of labour. Every particular in reference to this important process, from the subsidence of the womb to the expulsion of the child and placenta, is minutely considered, and in a manner to impress exact and clear views upon the mind of the student.

In treating of the several positions of the head, Dr. Meigs remarks that he is convinced by his registry of cases and by the course of his clinical experience for some years past, of the perfect correctness of the statement of Professor Nægelé, that, while the most ordinary position of the vertex presentation is that in which it is found nearest the left acetabulum, the one next in frequency is the fourth, or forehead left position, which he therefore calls, in his enumeration, the second.

"This," remarks Dr. M., "is a comfortable doctrine; for, the tyro, who has studied in the books the so called mechanism of the head in the pelvis, is very likely to be startled at the first case of forehead left presentation he shall meet with; but, if he now learns that it is a natural position, and the one second in point of frequency, he will not suffer himself to be disturbed by the occurrence; particularly if he remembers Dr. Nægelé's assurances,—that it is one as favourable for the mother and child as the first or vertex.

The mechanism of labour is clearly described in general terms, reserving the more minute details until each form of labour is treated of.

The chapter on the conduct of a labour is an excellent one—all meddlesome interference is reprobated, and yet a watchful attention inculcated in regard to everything calculated to render the condition of the parturient female comfortable—to sustain her courage, and to guard against every occurrence calculated to interfere with her labour, or to impede her "getting up." The author's remarks upon a resort to blood-letting during labour are particularly judicious—much mischief has arisen from a supposition, entertained by some accoucheurs, that a tedious labour is always to be benefited by venesection if the pulse be full, vigorous and somewhat accelerated.

In relation to the delivery of the placenta, Dr. Meigs lays down the following sound doctrine. We have heard it advocated by highly respectable obstetricians, that, so long as there is no hemorrhage, there is no danger of allowing the placenta to remain within the uterus, should even a day or more elapse before it is expelled.

"Some writers," remarks our author, "have been disposed to assign a fixed period, up to which the accoucheur ought to wait, before he resorts to compulsory measures for the delivery. But there can be, or ought to be, no fixed rule on the subject, except this one rule, the placenta must be got away, as there is no security while it is left. I have never gone away from a patient leaving the placenta undelivered. I think I have never waited for its spontaneous extrusion more than an hour and a half, for I have always supposed that if it would not take place in one hour, there was little prospect of its taking place in twenty-four hours. I cheerfully admit, however, that cases may and do occur, in which a longer delay might be advisable. I have not met with such cases."

Dr. Meigs' explanation of the retention of the placenta by an hour-glass contraction of the womb, is probably the correct one—namely, that the placenta is preternaturally adherent, and acts as an internal antagonist to the contracting of that part of the uterus where it rests, while the other portions contract as usual. He advises delivery at once, in all cases where the exist-

ence of an hour-glass contraction can be clearly made out. This, we are persuaded, is the correct practice. After describing the mode of delivery in such cases, Dr. M. adds—

"This operation it has been my fortune to be compelled to perform a good many times; and I can safely say I have never seen any bad results from the practice. I repeat, it may be done so gently and dexterously, as even to occasion but little pain. No patient for whom I have performed this service has died."

Upon the treatment of the female, the precautions to be observed, and the accidents liable to occur, immediately after labour, Dr. Meigs is very full. The whole of his remarks on these points will be particularly useful to the student and young practitioners. His absolute proscription of the tampon, in cases of hemorrhage after delivery, should be duly considered.

The present chapter concludes with remarks on the subject of etherization in labour. It is well known that Dr. Meigs is a decided opponent to the employment of anæsthetic agents with the view of suspending the pains of parturition. His letter to Professor Simpson, which is here inserted, comprising his leading objections to the induction of anæsthesia, has been widely circulated, consequently we need not enter into an exposition of them on the present occasion.

The next three chapters treat of face presentations, pelvic presentations, and preternatural labours. The first two—their mechanism and management—are minutely detailed and illustrated by drawings. Dr. Meigs regards the pelvic as a natural labour.

"The breech," he remarks, "composes one end of the fœtal ovoid; and a breech labour requires, for its complete success, no greater dilatation than that demanded for the passage of the head: it may be effected without any aid, and is, perhaps, not really fraught with greater danger to the mother than the other, the common vertex presentation. It is, however, far more dangerous for the child than the vertex case, and as the object of parturition is the safe birth of the infant, it might be proper to include, in the class of preternatural labours, all things in which the child is exposed to unusual hazard. Still, many breech presentations terminate favourably with great celerity, and without any artificial aid, whence I look upon them as not really preternatural."

The subject of turning in cases of shoulder and arm presentations is considered in all the detail its importance demands.

In cases of placenta prævia, Dr. Meigs objects, on theoretical grounds, to the plan proposed by Messrs. Simpson and Radford, of promptly separating the entire placenta—and his objections would appear to be valid. Still, we cannot reject the evidence adduced in favour of the separation of the placenta by gentlemen of unquestionable skill and veracity. Admitting, however, that the supposition of Dr. M., "that in any case in which it is possible to detach the *whole* of the placenta, it would be also possible to introduce the whole of the hand, and thus commence at once the operation of turning," is well founded, and that this operation "ought to be esteemed as the essential indication of treatment in placenta prævia—which, the earlier it is done, so much the greater chance does it give both of rescuing the child and saving the woman from fatal losses of blood," we see no necessity for discussing the propriety of separating the placenta, further than is necessary to admit the hand.

Dr. M. presents a series of excellent directions for the prevention and suppression of post-partum hemorrhage, as well as that following the after-birth.

The section on puerperal convulsions is a most admirable one—that the practice inculcated by the author in this frightful form of preternatural labour

is the correct one our own experience bears ample evidence. We have tried etherization in these cases. In a case in which convulsions came on in the early period of labour, with the head high up and the os uteri rigid and but partially dilated—after the abstraction of twenty ounces of blood, the female was placed under the influence of ether—the convulsions were suspended, and she was delivered of twins within a couple of hours, by the unaided powers of the uterus. The moment the effects of the ether passed off, the convulsions returned with great violence, but were subdued by cups to the temples, sinapisms to the extremities, and purgative enemata. The mother and one of the children—the other was dead-born—are doing well.

The other varieties of complicated labour are treated with equal ability. In relation to their character, diagnosis and management, the student will have but little instruction to desire that is not furnished to him by Dr. Meigs. In this, as well as in the other portions of the work, the results of the author's clinical experience are strikingly adduced to illustrate and enforce his instructions.

The subject of preternatural labour from deformed pelvis and from rupture of the uterus are treated of in Chapter XIV. Both subjects will command the close attention of the student. The latter does not appear to us, however, to have received from the author all the attention its importance demands. Neither the predisposing and exciting causes, nor the phenomena consequent upon the occurrence of the laceration, are described.

The ensuing chapter is devoted to a consideration of the forceps, the history of their introduction, the various modifications which have taken place in their form and size, and a description of those now in use. Dr. Meigs gives the preference to the instrument of Davis. His remarks on the true office of the forceps are excellent, and his directions for their application and management sufficiently clear. We doubt, however, whether any one can acquire, from description alone, a sufficient acquaintance with the subject to enable him to succeed in the application of the forceps.

The subject of embryulcia is next considered, in relation to which the author's remarks are concise but very pertinent.

After describing a pelvis in which the deformity is so great as to render delivery impracticable with an unmutilated child, Dr. Meigs proceeds thus—

"Such a pelvis is not fit for the forceps, since it is too small for them to be withdrawn when locked. The question must always be, therefore, between the perforator and crotchet on the one hand, and the Cæsarian section on the other. But this is only to be considered as relative to the living child. Of the dead child no question can arise as to the mode of its delivery, except that of the perforator, and whether sooner or later. *The dead child must always be withdrawn* per vias naturales, *if there be space enough to extract it through with equal safety.* But even when the child is known to be dead, we may be compelled to perform the Cæsarian operation, if we would deliver the woman at all. Since the deformity may reach to the degree of shutting up the passages against the perforator." "The practitioner who may be in charge of a case of labour where embryulcia is indicated, must be guided by his judgment, and the counsel of his medical brother as to the signs which compel him to undertake the delivery. I have already enumerated them, and they are easy to be understood. There is in general far more danger of the operation being deferred too long, than of its being performed too soon, since, if it be not performed in time to save the life of the mother, it would be as well not to do it at all. I know that in uttering this sentiment, I am liable to the imputation of wantonly encouraging the use of this dreadful operation, but I wish to disclaim such an intention. I hope that no man living is reasonably more reluctant than I am to use any obstetric

instrument whatever, and I fear that a resort to its employment is often had very unnecessarily and rashly. But I think that, when the case under consideration arises, we ought to act so promptly and so understandingly, that we may, on the one hand, derive a perfect success from it, and on the other, stand acquitted, in our own judgment and in that of others, from the charge of any rashness or precipitation. I shall strive, therefore, while I reiterate the opinion, to clear myself, by repeating that all such cases require a medical consultation. To mutilate the child, and then lose the mother, is a real misfortune, both for the practitioner himself and for the profession, which from such results, is in danger of falling into disrepute.

"It is to be understood, then, that where all other instrumental means fail, where, after due reflection upon the circumstances that hinder the delivery, a conclusion is formed that the mother and child must both perish, unless the latter be withdrawn by the assistance of instruments that mutilate it, where the Cæsarian operation is inadmissible, or rejected by the patient, we have the remaining and very sure resource of the operation of embryulcia, or embryotomy, and we can venture to encourage and cheer the unhappy and suffering female with the prospect of speedy relief by its means."

Dr. Meigs dismisses the important question of the induction of premature labour, in cases in which from deformity of the pelvis the birth of a living child at the full time is rendered impossible, with a few rather, we conceive, unsatisfactory remarks. That the operation is legitimate, he admits is not to be doubted, and that he who does it properly acts within professional rules and usages; but, he adds, inasmuch as every premature labour furnishes some just grounds of apprehension, both for the parent and child, I am very clear in the belief that *well understood motives alone can justify the accoucheur who performs it.* But is this not true of every obstetric operation; is any one of them justified excepting when performed from well understood motives? We had expected to have heard from our experienced author something in regard to the probable advantages of the induction of premature labour in the cases in which it is alone justifiable. Something of the statistics, so far as they can be collected, of the operation. Some account of the proper time and mode of performing it. It is seldom, in the volume before us, that, in relation to any important obstetrical procedure, Dr. Meigs furnishes his reader with such unsatisfactory data for the formation of an opinion as in the one under consideration.

Some excellent remarks follow on inversion of the womb after delivery and the mode of proceeding for its reposit.

Puerperal fever constitutes the subject of the next chapter. The views of Dr. Meigs in relation to the pathology and treatment of this frightful disease, are well known to the medical profession. He believes the disease to be an extended and highly acute inflammation of, principally, the peritoneum, demanding for its treatment the early, bold, and judicious employment of venesection. He presents a very good outline of the symptoms and progress of the ordinary form of the disease. That puerperal fever is in many cases dependent strictly upon peritonitis and in others strictly upon uterine phlebitis our own, as well as the observation of others, have convinced us. That the disease, under different circumstances and in different epidemics, presents very important differences in its general characteristics cannot, we believe, be doubted. Hence, in treating of puerperal fever as one disease, we shall be led into gross errors, as well pathological as therapeutic. In respect to the treatment laid down by our author; in sporadic cases, and perhaps also, in certain epidemics of the disease, and in particular localities, it will be found, if judiciously carried out, the one best adapted to arrest the malady. We have employed it in

several cases with the effect of cutting short the disease. But, he who shall attempt to follow it in all the epidemic forms of puerperal fever and in all localities, be it commenced ever so early and conducted with the utmost boldness and judgment, will find but little to pride himself upon in its results; as in the case of Dr. Clarke, of London, stated in the letter of Dr. Collins to Dr. Meigs, he will find himself forced to abandon it. In the epidemic puerperal fever of the Dublin Hospital, Dr. Clarke, we are told, bled *instantly* and *copiously*, but with the most fatal results.

A short chapter follows on atresia vaginæ, illustrated by an instructive case.

Some very judicious remarks follow on the use of ergot. As a means of quickening a tedious labour, Dr. Meigs very properly objects to its employment.

"In the case," he remarks, "of a feeble and attenuated patient, with relaxed and weak tissues, whose labour is lingering merely from want of power, and not from unnatural resistance, I can imagine that the ergot might be safely administered at almost any stage of the labour. But in a woman in good health, whose labour is slow for want of proper rotation of the head, or rendered lingering by rigidity of the os utero, vagina, or perineum, or vulva, or excessive relative magnitude of the head, the greatest degree of consideration should be given to the whole case, before resorting to the ergot, in order to decide which is preferable, the secale, or the forceps or vectis." "The practitioner who should dare to drive the uncovered head of a fœtus against a rigid cervix in spasm by means of the mad force of ergotism, is, to say the least, a most untrustworthy practitioner, one who recklessly exposes his patient to the danger of uterine lacerations, and is indifferent to the poignant distress which cannot fail to result from such an administration."

Dr. Meigs remarks that he rarely gives ergot as an expulsive agent; he chiefly employs it at the moment of, or just before the birth of the child, in order to secure, if possible, a permanent or tonic contraction of the womb, after labour, in women who are known in their preceding labour to have been subject to alarming hemorrhage.

The chapter on milk-fever—inflammation of the breast—weed—and mammary abscess, is a most excellent one. Too many practitioners believe that their duty is fulfilled towards the parturient female, so soon as the child is safely delivered, and, after a few visits, leave their patient to the tender cares of the nurse—whose injudicious interference often brings on the very train of evils it was the duty of the obstetrician, by a cautious attention to his patient, to have prevented. A careful perusal of the chapter before us will point out to the student and young practitioner, some of the more prominent tendencies to disease in the recently delivered female—the means by which they may be controlled; or, when they have fully developed themselves, by which they may be most certainly conducted to a favourable termination.

The fourth, and last part of the treatise, is devoted to the history and diseases of the young child. We wish every parent, every citizen, whether male or female, could be induced to read and inwardly digest the directions given by Dr. Meigs for the management of the new-born infant—especially in regard to dress—early application to the breast—and alimentation generally. They are throughout marked by sound sense, and if generally adhered to, would save many an infant from much suffering, diminish the mortality among those of tender years, and relieve parents from many anxious hours of watching spent over the couches of their offspring, and from the pang of seeing those expire whom they had hoped to rear as the ornaments and props of their after years.

We recommend this chapter to the earnest attention of the student and young practitioner.

The remarks of the author on the more frequent of the affections incident to the new-born child, though short, are interesting; we doubt, however, the accuracy of Dr. Meigs' description of aphthæ, and certainly cannot accede to the supposition that muguet, as it is termed, is a vegetable substance attaching itself to the interior of the mouth. Our experience has taught us that this latter form of stomatitis is the one most commonly met with in young infants. It is certainly much more common than the true aphthous stomatitis.

We now come to the last chapter of the treatise, which treats of cyanosis neonatorum. The author commences with warning the student that it is not his design to treat of all the affections that may in any wise serve to contravene the aëration of the blood—all of which are causes of cyanosis—but only of the blue disease of young children, or *those cases that are coincident with permanency, after birth, of the characteristics of the fœtal heart.* But this is a begging of the very question, which is to be proved. We believe that there are very few cases in which cyanosis does not appear at birth, or within a very short time subsequently—hence, it was incumbent on the author to point out clearly the diagnosis of the cases to which his remarks are alone applicable. Cyanosis neonatorum, according to Dr. Meigs, results from an asynchronous action of the heart; the right auricle acting with greater force, or earlier, or more rapidly than the left, in consequence of which the blood in the right auricle is made to lift up the valve of Botallus, and pass into the left cavities of the heart, from whence it is distributed to the brain and other parts of the body—its presence in the brain producing a state of partial or complete asphyxia, producing sudden death, or the condition termed cyanosis.

The cure of the whole disease, in such cases, is to shut down the operculum, or valve of Botallus, which Dr. M. believes may be done by placing the child in such a posture as will bring the septum auricularum into a horizontal attitude, and thus causing the blood in the left ventricle, by its weight, to press down the valve of Botallus, and prevent the venous blood from escaping from the right into the left cavities of the heart.

All this at first view, appears to be very clear and very reasonable; but, on asking for the evidence that cyanosis is ever produced in the manner described by Dr. Meigs, we find that there is none, and that the entire hypothesis is a mere closet speculation, and which most unfortunately stands in direct opposition to the entire mass of facts derived from pathological anatomy. These prove that a mere patency of the foramen ovale will not give rise to cyanosis, but that in every fatal case there is found to exist some cause or other, which tends essentially to prevent the free and complete circulation of the blood through the lungs, to retard its passage through the venous system, and, consequently, to render the process of arterialization more or less slow and incomplete. But Dr. Meigs will reply, that he admits various malformations of the heart and its vessels—unnatural states of the lungs, whether congenital or accidental, in short, whatever prevents the due exercise of the whole function of respiration, as among the possible causes of cyanosis; that he had no design of treating of the cases which are dependent upon these causes, but only of such as result from simple patency of the auricular foramen with asynchronous action of the heart. Before, however, we can be called upon to receive his rationale of these cases, he must first prove their existence by evidence as conclusive as that which has been adduced by numerous pathological anatomists in disproof of their occurrence.

Dr. Meigs will probably urge that the correctness of his views in regard to the mode in which cyanosis neonatorum is produced are fully borne out by the success attendant upon the practice based upon it. But this does not necessarily follow. Even in cases of cyanosis from congenital malformation of the heart or large blood-vessels, the position of body recommended by him is admirably calculated to relieve the frequent exacerbations of all the prominent phenomena of the disease to which the patients are liable. As Mr. Chevers remarks, it places the greater portion of the voluntary muscles in a state of relaxation, thereby rendering the circulation through the extreme vessels as free as possible—relieves the chest from compression, and what is of still more importance, it facilitates the supply of arterial blood to the lungs and brain. But, that it can have the effect, in any case, of causing the blood of the left auricle to press down the valve of Botallus and thus close the direct communication between the right and left sides of the heart, seems to us impossible. Nor can we believe that the weight of the blood in the living heart in incessant action, can be made, in any position in which the body may be placed, so to bear upon the valve as to press it down over the septum auricular opening. We can be scarcely styled presumptuous if we require of the author proof of the fact.

We admit that in numerous instances, in which a casual and temporary impediment existed to the free passage of the blood through the lungs, permanent relief has been effected by the patient being placed, and retained for a time, in the position advised by Dr. Meigs, but we cannot admit that these were genuine cases of cyanosis. A strict analysis of the phenomena in more than one of the cases given in some detail by Dr. Meigs, will, we believe, convince any pathologist, that they present no evidence of malformation of the heart, nor of the passage of the venous blood into the left cardial cavities, but merely of some casual and transient impediment to the process of respiration, or to the free circulation through the pulmonary vessels.

We here close our brief notice of the work of Dr. Meigs. Our favourable opinion of it as a treatise on the science and the art of obstetrics, has been already freely expressed. It has seldom been our lot to peruse a work upon the subject, from which we have received greater satisfaction, and which we believe to be better calculated to communicate to the student correct and definite views upon the several topics embraced within the scope of its teachings —we regret that, upon any one topic we have found it necessary to differ from the author—we have done so in no instance from a mere fault-finding spirit, but from a well grounded conviction, that the views advanced by the author are erroneous. It is unnecessary for us to recommend the work to the favourable notice of the profession; before even our remarks shall reach them, the work, we are persuaded, will be in the hands of the major portion of American physicians, as well as of those who are destined shortly to become such.

D. F. C.

ART. XI.—*Report made to the House of Representatives of Massachusetts on the Commission of Lunacy.* House Doc. No. 72, pp. 10. Boston, 1846.

First Report to the Legislature of Massachusetts by the Commissioners appointed to inquire into the condition of Idiots within the Commonwealth. By SAMUEL G. HOWE. House Doc. No. 152, pp. 20. 1849.

Second Report to the Legislature of Massachusetts by the Commissioners appointed to inquire into the condition of Idiots within the Commonwealth. By S. G. HOWE. pp. 147. Boston, 1848. Senate Doc.

Causes and Prevention of Idiocy. pp. 24. By S. G. HOWE. Boston, 1848.

NEXT to the poverty of the body—nakedness and hunger—the poverty of the mind is occupying public attention and anxiety, and the insane have become, and are becoming, the objects of interest. But it must be confessed, that this interest was excited in former times generally, and in many places even now, not so much for the good of the suffering lunatics as for the security of the healthy people. The insane were supposed to be too dangerous to others to be allowed to run at large; and they were, therefore, confined in strong places, and other means of security were used, so that the timid public should suffer no injury from them. Some were enclosed in worse places than violent criminals; and the jail, both here and elsewhere, divided its accommodations and its discomforts between the law-breakers and the lunatics; for their recovery was not a thing sought for or expected, and no plan was laid, nor means provided, for this purpose. These patients were deemed as permanent nuisances, and were merely to be kept, not out of harm's way, but out of the way of harming.

But, in the course of time, it was discovered that even these hopeless sufferers could be improved; and that most of them, if attended to in proper time and manner, could be restored to health. Consequently, the insane, in many places, are provided with all the means of restoration, and receive as tender and as successful care as those who are sick with other diseases.

Notwithstanding these judicious provisions for, and attention to, the wants and sufferings of the lunatics, there are many whose disease sank into dementia, and they are now left in hopeless fatuity.

There was another and much larger class, who were born without mental capacity, or with it, at most, very imperfect; or, in whom it had never been developed. These were the idiots. It could not be said, that they were to be restored to health, because they had never been in any higher condition from which they had fallen. Their state was not a disease, that should be cured; nor a perversion from which they could be drawn back; but it was an original want of power or defect of development.

Believing that nature had unalterably fixed them in their present condition, that, as one class of men were created for intelligence and self-direction, so these were created for idiocy and dependence, the world has hardly entertained the suspicion that they could be improved, and has therefore left them to themselves in their degradation, and only provided for their animal wants, and protected them from harm.

Besides these congenital idiots, there were many others who had, in their early years, more or less intelligence, and gave promise of becoming like other men and women; but, from some cause or other, and often from no cause that was known to their families or friends, their minds withered away,

and they sank into idiocy as deep and as confirmed as those who were born to this condition.

All these, the demented, the congenital, and the supervened idiots, constitute a large class in every country, and bear very heavily upon every community for their care and support.

That fallacious document, the United States Census of 1840, states, that there were then 1271 idiots and insane in the State of Massachusetts, and 17,456 in the whole Union.

Certainly there are as many as, and, without doubt, many more than are here stated; for, wherever any trustworthy inquiries have been made, the numbers of the insane and idiots have been found greatly to exceed the statements of the national census.

These idiots are the outcasts of society everywhere, and yet they are dwelling in the bosom of many families. For them and for their friends, for those who supported them and for the keepers who sometimes guarded them, there seemed no hope of amendment. There was, rather, a fear, and even an expectation, that they would grow worse. The best that they could look for was, that they might go through, and end their low and imperfect life as they had begun it.

But, about fifty years ago, accident suggested to some persons in France, that idiots might be improved. Some philosophers of the sensualists' school, wishing to prove that all our ideas were received through the senses, undertook to teach a wild boy who had been discovered wandering in the forest. He had no language, and apparently no ideas. But, after ineffectual attempts to teach him according to the sensualists' theory, it was discovered that he was an idiot. Yet the labor of Itard, the instructor, was not all lost, for it showed him that his pupil, however low and small his intellectual powers might be, could be educated in some degree. Itard becoming interested in this matter, continued his efforts in his enviable work, until he was convinced, not only that his single pupil could be improved, but that other idiots could be benefitted by education.

Various attempts were made in France to do something for this class, and with a success proportioned to the wisdom and energy of the efforts. Among the most active was Mr. Edward Seguin, who, by his writings and his example, enlisted others to co-operate in the same work. Mons. Ferrus established a school for this purpose in Paris, in 1828, and Dr. Voisin established another in 1839. Dr. Leuret and Mr. Vallée also lent their powerful aid to the work. The result of all these efforts proved, that humanity, even in its feeblest and most degraded condition, can almost invariably receive some advantage from education; and that the dormant power can be roused, and the darkened intellect can receive some light from proper instruction.

In the winter session of 1846, the Legislature of Massachusetts authorized the Governor

> "To appoint three persons to be commissioners to inquire into the condition of the idiots in this Commonwealth, to ascertain their number, and whether anything can be done for their relief, and to make report of their doings to the next general court."

Happily for the success of this scheme, Dr. Samuel G. Howe, the philanthropic director of the Perkins Institution for the Education of the Blind, was appointed chairman of this committee of inquiry. He laid his plans with good judgment, and pursued them with his accustomed energy.

In the winter of 1847 the commissioners made their first report. But they had made but a partial survey of the State. They had sent circulars of in-

quiry to the clerks of every town and city. They had personally visited as many towns, and examined as many idiots, as possible. They had obtained information from France, Prussia, and Switzerland, in regard to the manner and success of the treatment of idiots in the schools which had been established for their education in those countries.

By all these means the commissioners had obtained much valuable information, but not all that was desired. They were, therefore, authorized to continue their inquiries through another year.

At the session of 1848, Dr. Howe laid before the Legislature the result of his second year's labor in this work; and the whole is published by order of the government, in a pamphlet of 100 pages of text, and an appendix of tables extending through 48 pages more.

These reports of Dr. Howe contain a great amount of important information relative to the personal and social condition, and the numbers, of idiots, and to the supposed causes of idiocy; and are, therefore, valuable contributions to science.

They treat of the number of idiots in Massachusetts; definition of terms *idiot* and *idiocy;* capacity, condition, and treatment of idiots in private families and in almshouses; cleanliness, alimentation, and exercise of idiots; of European schools for idiots, and of a proposition for the same in Massachusetts. In the supplement Dr. Howe treats of a classification of idiots, the supposed causes of idiocy, parentage, hereditary tendency to bodily and mental imperfection, circumstances which predispose to idiocy, physical and moral condition of parents, intemperance, self-abuse, intermarriage of relatives, and attempts to procure abortion.

The appendix contains several tables which describe the 574 idiots who were examined, showing their origin, present condition, and future prospects.

Dr. Howe personally visited many towns and examined a great many idiots. Besides this, a competent and trustworthy agent, Mr. Enos Stevens, was employed for the same purpose. In course of the years 1846 and 1847, they visited 182 towns, containing, at the last census, 392,586 inhabitants, and discovered 755 idiots. If the same proportion prevails in the whole State and nation, there are 1,418 idiots in Massachusetts, and 32,827 in the United States. They carefully examined 574 of these idiots and made a record of their names, their physical, moral and mental character and condition, their parentage, history and the probable causes of their disability, and the whole, with the exception of their names, is published in the Report before us.

There are many minute details respecting the parentage, the habits and condition of the relations of the idiots, the bodily state and mental power of the subjects, the size and form of their heads, &c., which to a careless observer may seem trivial and irrelevant. But as "this whole subject of idiocy is new, and science has not yet thrown her certain light upon its remote or even its proximate causes, nothing connected with them can be too minute to be observed by the philosopher who is in search of the origin of this low condition of man."—*Second Report.*

Dr. Howe is a believer in Phrenology, and has brought the principles of that philosophy to bear upon this subject; and although he has not attempted to base this investigation upon that science, yet he has availed himself of its classification of the powers and qualities of man in the conduct of his inquiry.

Supposing in the advance, what seems to be shown in the result, that the mental and moral conditions are connected with the general bodily and the cerebral organization, the stature of the idiots, the size and shape of their heads, and the width and depth of their chests have been measured and the

shape of their whole frames and limbs have been examined, and the record of each fact is published.

A large portion—14 pages of the Second Report—is taken up with an attempt to define idiocy, or rather an attempt to reconcile the many, various, and conflicting definitions with which the medical and legal writers have endeavoured to describe this state. Our space will not allow us to enter upon this part of the subject, nor should we hope to be more satisfactory than others who have gone before us. Of all the definitions, that we find, none include all who are indubitably idiots, without including some who plainly belong to the more intelligent classes of mankind: and these definitions are so unlike that no two of them, when applied, would include precisely the same number of individuals.

There is and can be no distinct and definite line drawn through society, on one side of which it can be confidently said, that all are idiots, and on the other side all are of sound mind. The several moral and mental qualities and powers that enter into and make up the mind and character of man, are very unequally distributed. One person has much of one kind, and a disproportionately small quantity of another, and very little of a third, and perhaps none of a fourth. And another may have a very different distribution of power, and be strong in those in which the first is weak, and weak where he is strong. Thus, No. 413 has perception of musical sounds and ability to count, much above the average of men of sound minds, but his skill in the use of his perceptive and reflective faculties are much below them; but No. 139 has a very small arithmetical power, and is dull in regard to musical sounds, while his perceptive faculties are equal to the average of mankind, and his reflective faculties only half as strong. Then we often see a man who is sufficiently wise in ordinary affairs, but has no skill in numbers, or very acute in his perception of facts, but very dull in reasoning from them.

From the lowest idiot, who cannot even control his muscular power so much as to move his limbs or masticate his food, who can neither see, nor hear, nor feel, up to men of the highest order of intellect, there are all intermediate grades of intelligence, without interval between them. And the mental and moral qualities are distributed in such various proportions in these persons, that it is impossible to classify them strictly.

Idiocy is a defect rather than a disease, a deficiency of the several powers in greater or less degree, rather than a disease of the powers that are originally perfect. Dr. Ray calls idiocy a defective development. This agrees with Esquirol, who says: "Idiocy is not a disease, but a state in which the intellectual faculties have never been manifested." Most of the legal descriptions point to this. Blackstone says, "an idiot or natural fool, is one who hath no understanding from his nativity." The old English law recognizes the same origin.

After quoting several definitions of idiocy, Dr. Howe says, "Without pretending to scientific accuracy, idiocy may be defined to be that condition of a human being in which, from some morbid cause in the bodily organization, the faculties and sentiments remain dormant or undeveloped, so that the person is incapable of self-guidance, and of approaching that degree of knowledge usual with others of his age."—*Second Report*, p. 19.

There are all degrees of this condition, from the weak-minded man, who errs in judgment and needs counsel of others in the conduct of his affairs, to the lowest idiot, who is but a mere organism.

Writers have made various divisions, each one according to his view of some prominent traits or defects of idiots. To these Dr. Howe adds a division of

his own, which is as applicable as any that have been offered, and certainly is as convenient and practicable, inasmuch as it has regard rather to the degree of helplessness and dependence of idiots on others for direction and support.

"Idiots of the lowest class are mere organisms, masses of flesh and bone in human shape, in which the brain and nervous system have no command over the system of voluntary muscles; and which consequently are without power of locomotion, without speech, without any manifestation of intellectual or affective faculties.

"Fools are a higher class of idiots, in whom the brain and nervous system are so far developed as to give partial command of the voluntary muscles; who have consequently considerable power of locomotion and animal action; partial development of the affective and intellectual faculties, but only the faintest glimmer of reason, and very imperfect speech.

"Simpletons are the highest class of idiots, in whom the harmony between the nervous and muscular system is nearly perfect; who consequently have normal powers of locomotion and animal action; considerable activity of the perceptive and affective faculties; and reason enough for their simple individual guidance, but not enough for their social relations."—*Second Rep.*, p. 61.

Idiocy, like insanity, may be intellectual or moral, or both, and it may include all or any part of those classes of powers, and in any variety of combination.

Having determined as nearly and stated as clearly as possible what idiocy is, and what idiots are, Dr. Howe next describes the condition of those who had been examined.

Of the 574 idiots, 420 were so from birth, and 154 were originally intelligent, but became idiotic in subsequent years.

Most of them are poor, and a large proportion are public paupers; 22 have property of their own held by guardians; 62 belong to wealthy families; 225 belong to indigent families, but are not public paupers; 220 are town or state paupers; the pecuniary condition of 45 was not ascertained.

In regard to their dependence or power of self-sustenance—

"Fifty-three are as helpless as infants; 74 are as helpless as children two years old; 94 as children seven years old; 138 can work to some small profit, if carefully watched and directed; 179 can nearly earn their board if directed in work by others; and 36 can earn their board and clothing under the management of discreet persons."—*Second Report*, p. 22.

This shows very plainly the absolute and entire dependence of most of this class, and the partial dependence of the rest on the sound and the healthy for support and direction.

Their ages range from six months to 103 years; eleven are under five; forty-nine under ten; 200 under twenty-five; 372 over twenty-five years of age; and the ages of two are not stated.

The great end of all this inquiry was to ascertain the capacity of idiots for improvement. Dr. Howe thinks that 174 of the congenital idiots, and 22 of the supervened idiots under twenty-five years of age, and 195 congenital and 97 supervened idiots over twenty-five years old are capable of improvement. These are proper subjects of education; they can be taught to do some kinds of labor, to acquire some kinds of knowledge, to attend to their own persons and take care of themselves.

Of the younger class thirteen congenital idiots, and of the older class thirty-eight congenital, and thirty-eight supervened idiots appear to be capable of little or no improvement.

Besides their helplessness and dependence, the situation of these idiots is deplorable indeed. Dr. Howe says of the public paupers: "They are of all

sorts and grades of idiocy, from the mere simpleton who cannot take care of himself, to the drivelling idiot who wallows in his filth." "Some are comparatively free from the dominion of animal lust and appetite, and are mild, affectionate and docile; others are a helpless prey to dreadful passions, depraved appetites and disgusting propensities."

Some want instruction, and if properly encouraged and directed, will cooperate with a teacher in their education; others are as insensible and unimprovable as the oyster, and can receive no advantage from others, except to be fed, clothed, and sheltered.

A large portion of these idiots are kept in public alms-houses, and although Dr. Howe says that he met with no instance of wilfully unkind treatment of idiots, by keepers of any alms-houses, and that "in most cases the overseers of the poor have given orders for the idiots to be treated with kindness," yet they suffer for want of proper management; for however humane and discreet in ordinary affairs the keepers of these houses may be, yet that special character which is best fitted for the direction of idiots, the peculiar talent which can best understand their degree of intelligence, and adapt its use of motives and its plans of action and government exactly to their comprehension, docility and power, is not sought for, and if it is found in any of the keepers, it is rather accidental than the result of design and care on the part of the public authorities.

In consequence of their disability of mind and body, idiots are incapable of taking so much care of their own persons and doing so much for themselves as others do; they therefore need more care and aid from others to keep their bodies in proper condition. They have a lower sensibility, and their skins are not irritated by foreign matters, which may gather upon them; and moreover, their eyes are not offended by the sight, nor their nostrils by the foul odour of a filthy surface. They require, therefore, uncommon attention from others to keep them in a neat condition and to preserve them from offensive filthiness of person.

But, for pauper idiots generally, the means of this extraordinary attention are not provided; and, according to the report, "in a great many of our alms-houses, they are disgustingly filthy. They change their body and bed linen only once a week, and never bathe." In this last matter, idiots form no remarkable exception to a very large part of the people, and we fear that if this were to be adopted as a test of competent mind, very many who are considered as of sound mind, would be thrown into the class of imbeciles.

Idiots do not need more cleanliness than other persons; but they do need as much, and it requires much more care from others to maintain their external purity, and if they are neglected, they become more filthy and offensive.

Idiots have generally great appetites, and many of them eat voraciously. Minute inquiry was made as to the quantity of food which 444 usually ate, and this quantity was compared with that which others of the same sex and age usually eat, and the result shows, that 20 consume less than the average; 81 just the average quantity; 343 more than the ordinary allowance, and 116 just double the amount that others eat, and the average for the whole 444 was about 50 per cent. more than that required for other persons.

Besides this enormous allowance which they obtain by consent of others, they often steal more, and some will devour the offal and the waste of the kitchen, even the foulest and filthiest garbage which is intended for the swine.

This gluttony increases their natural stupidity, for the nervous energies which might go to sustain a muscular or mental action are all absorbed in sustaining the digestive process.

Idiots are prone to inaction. They do not love motion, and still less labour. They prefer to bask in the sun, and lie there in utter quiescence of both body and mind. If they are required to work, they do it so unskilfully, and need so much direction and urgency, that their labour is unprofitable, and those who have the care of them find it easier to support them without, than with, their help. Consequently, very few of them work for the profit or advantage of the labour. Still fewer take any action for the sake of the exercise, and for health. They will not do it voluntarily, and others are unwilling to urge it upon them. Their bodies are therefore sluggish, and their minds stupid. They have weak muscles, and, though their frames may be sufficiently full, and their limbs sound, yet it is rather from fat than muscular fibre, of which they have comparatively little.

The general management of the idiots in private families is not much better than in alms-houses, and in many it is much worse. Of the 354 who were examined in private houses, only 5 were treated very judiciously. These were submitted to the best influences for education and direction; they were taught all that they could learn; their powers were developed to the fullest extent; their propensities and passions were therefore controlled or restrained, and they were made comparatively happy and useful.

But these idiots are generally found in the poorest and most ignorant families. They are the children of the weak, and the foolish, and sometimes of other idiots like themselves. There is, therefore, manifested in these families a gross ignorance both of the causes, and of the nature, of their disability. Their children are thus subjected to the worst influences, the most improper treatment, and, in some cases, to the strangest experiments for their improvement.

"Sometimes they find that their children seem to comprehend what they hear, but soon forget it; hence, they conclude that the brain is soft, and cannot retain impressions, and then they cover the head with cold poultices of oak bark, in order to tan or harden the fibres. Others, finding it is exceedingly difficult to make any impression on the mind, conclude that the brain is too hard, and they torture the poor child with hot and softening poultices of bread and milk; or they plaster tar over the whole skull, and keep it on for a long time."—*Second Rep.*, p. 32.

Some give mercury to act as a solder, to close up the supposed crevices in the brain, &c.

Some encourage their children in their ravenous gluttony, because they think the poor imbeciles have no other enjoyment but appetite, and they shall be indulged in that.—*Second Rep.*, p. 33.

In conducting this investigation of idiots, each one was examined personally, and inquiry was made of the friends in regard to every point that would throw any light upon their present condition, or its origin. Their parentage, their health, habits, powers, propensities were ascertained, their stature, their chest, and the size and shape of their heads were measured. The answer to each inquiry was noted in a memorandum book, and the whole digested and arranged into tables, which we have in the Second Report. The names are omitted in the printed table; but, each individual is numbered, and against this number are placed the answers to the forty questions that were asked.

The questions related to 1. Age. 2. Commencement of the defect, congenital, or not. 3. Height. 4. Temperament. 5. Tactile sensibility. 6. Command of muscular contractility. 7. Dynamic condition of the body. 8. Sensibility to musical sounds. 9. Skill in the use of language. 10. Capa-

city of fixing the sight on visible objects. 11. Ability to count. 12. Consumption of food. 13. Manifestation of the amative feelings. 14. Depth of chest. 15. Width of chest. 16. Greatest circumference of cranium. 17. Greatest diameter of cranium. 18. Diameter from the root of the nose to the occipital spine. 19. Transverse diameter over the ears. 20. Arc of cranium from the root of the nose to the occipital spine. 21. Arc from ear to ear. 22. Size of the lower frontal region. 23. Skill in the use of the perceptive faculties. 24. Size of the upper frontal region. 25. Skill in the use of the reflective faculties. 26. Size of the lateral region. 27. Activity of the faculties of self-preservation. 28. Size of the posterior region. 29. Activity of the social sentiments. 30. Size of the coronal region. 31. Activity of the moral sentiments. 32. Size of the cerebellum. 33. Activity of the animal nature. 34. Degree of ability to support themselves. 35. Parents in normal condition or not. 36. Parents drunkards or not. 37. Number of cases of idiocy or insanity known among near relations. 38. Scrofulous or not. 39. Given to masturbation or not. 40. Teachable or not. 41. Remarks.

The 1st, 3d, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, and 37th questions are answered in numbers positively, in regard to each one. The 4th is answered according to the preponderance and order of the nervous, fibrous, sanguine, and lymphatic temperaments. The highest is placed first, and the lowest last, against each idiot's name or number. The 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32d, 33d and 34th questions are answered in numbers, relative to the size, power, and development of the same, in 1000 ordinary persons of the same age and sex. In these, 10 is assumed as the normal standard of size, power, &c., and those of the idiots are stated in numbers higher or lower, according to the fact. Thus, No. 395, who ate the average quantity of food, is stated as 10; No. 360, who ate double the average quantity, is stated as 20; No. 259 has no language and is marked 0; No. 268 can use monosyllables and is marked 1; and No. 190, who talks as other persons, is marked 10.

It may seem forced to state the sensibility to musical sounds, or activity of the moral sentiments or reflective faculties in numbers, yet it is the most convenient way of showing the relative quantity or force of the powers or affections. And as the comparison was made on the spot and at the time when the answers were obtained, it is probable that these numerical statements are correct. The standard, however, is arbitrary, and various persons, who associate with society of more or less cultivation and talent, and have different fields of observation, will have different standards, and consequently different notions of the power of these idiots. Yet we know of no better way of making and stating the comparison, and we put forth these statements of Dr. Howe in confidence that the whole will be sufficiently understood for the purpose of the author, who merely wished to give the best notion of the mental and moral and physical condition of these idiots.

The 2d, 35th, 36th, 38th, 39th and 40th questions are answered "yes" or "no."

In the last column there are other remarks in regard to most of the persons examined, mostly in reference to parentage, health, habits and condition of parents and other relations, and also in reference to the history and habits of the idiot.

This table includes idiots of all ages, from a babe of six months to a superannuated idiot of 103 years. Comparatively few are given in the earliest years. Of the 418 congenital idiots whose ages are stated, only 43 are under ten, giving a proportion of 114 per 1000 of all, in the first decade of life

whereas the whole population of Massachusetts has 237 per 1000 of all, in this decade. Probably many, perhaps most of the idiotic children may have escaped the notice of the commissioners.

Dr. Howe says, that "there are a great number brought into the world so deformed, that it is apparent that they must be idiotic, and so feeble, that they do not live through infancy." "Idiots of the lowest class perish in great numbers in infancy and childhood: fools last longer; and simpletons attain to nearly the ordinary longevity. Perhaps it is safe to say, that the average longevity of the lowest class of idiots is not more than six years." And in the opinion of the commissioners the average duration of all congenital idiots is not more than twelve years.

As we are not sure that we have all the congenital idiotic children, we cannot determine the probable average longevity from this number. The average of all these is 28 years and 2½ months. The average age of all over ten years old is 31 years and 5½ months. That of all the whites of the State of the same age is 31 years and 9 months. So far as any inference can be drawn from this, an idiot, if he survive his tenth year, will live nearly as long as a person of sound mind. This would doubtless be an error. Probably the true longevity of all idiots, and of all above ten years old, is less than those above stated. This viability depends, in great measure, upon the perfectness or imperfectness of their organization. Hence idiots of the lowest class, who have the lowest organization, perish early; while simpletons whose intelligence and organization are not much lower than those of other persons, and who are saved much of the anxiety, wear and tear of life, that affect responsible men, often live to a great age. The one whose age is now 103 years, belongs to this class.

"When a person appeared in infancy or early childhood, to be idiotic, he is considered to have been born so." Those idiotic persons who never manifested more power than they now appear to possess, who, as they passed from infancy to childhood, did not put forth the talents of the new age, who, however low they may now be, have fallen from no higher degree of intelligence, are considered as congenital idiots. They belong to the class whom Dr. Howe considers as helpless as infants two years old.

There is another class who appeared in infancy to be as bright as other infants, and even when they were young children they showed no observable deficiency, but, when they passed from this stage of life to the next older, they put forth no more power, and remained ever afterward as weak and helpless as young children of seven years old. These are supposed to have some native defect of organization that prevents any greater expansion of intellect, under the ordinary influences, than they now exhibit.

Dr. Howe says—

"It was probably the intention of the legislature to use the word 'idiot' in the popular and common sense. We have considered, therefore, all persons whose understanding is undeveloped or developed only in a partial and very feeble degree, or who have lost their understanding, without becoming insane, to be proper subjects for examination."—*Second Report*, p. 21.

Of the 594 who were examined, 420 are reported as congenital idiots, and 154 became idiotic after birth: according to the table 29 of these in youth, and some in early manhood, were of sound and active mind, and became afterwards insane and then idiotic. The idiocy of the 154 is not caused, so far as can be known, by any defect of organization, but by some external cause or some habits or disease in the course of life.

Here arises a confusion and doubt which, Esquirol says, many fall into in

regard to the distinction between idiocy and dementia. Shall those who have once been intelligent but gradually fell afterwards into the idiotic stupor, without the intervention of lunacy, be considered as idiots or as demented persons? Esquirol solves the difficulty by disregarding the symptoms, and looking only at the history in making his distinction. "Idiocy is a state in which the intellectual faculties have never been manifested."—*Maladies Mentales*, ii. 284.

"A man in dementia is deprived of that which he has once enjoyed. He is a rich man become poor. The idiot has always been poor and wretched."—*Maladies Mentales*, ii. 285.

The stature of 288 idiots was measured. The average height of 172 males was 64:7 inches, and of the 116 females, 60 inches. These facts would be very valuable, if we had the standard height of healthy men and women with which we could compare them. Unfortunately we have no such data. If, however the general notion, that 67.5 inches is the average height of adult males, this measurement will corroborate our opinion, that idiots have a smaller stature than other persons.

The *width and depth* of the chest was ascertained in 224 adults, and their average corresponds precisely to that of other persons.

Temperament.—The temperaments of 417 idiots were ascertained and reported in the table. The four classes, nervous, sanguine, lymphatic and fibrous, are stated in the order of their preponderance against each of the 417 persons. In 143 the fibrous, in 139 the nervous, in 102 the lymphatic, and in 33 the sanguine predominated and stand first in the table.

Tactile or cutaneous sensibility.—Some have very great, even an unnatural cutaneous irritability, others have very little sense of touch, so that they are not disturbed by flies and other insects on the skin, and take no pains to brush them off. This is not owing merely to general want of power in the nervous system. One female, case No. 210 in the catalogue, 19 years of age, has so little cutaneous sensibility, that she takes no notice of flies on her skin, and very little of the prick of a pin or pulling her hair. "But she is quite animated by the sound of music, and will leave off eating to listen to it." She is therefore marked 4 as to sensibility of touch, and 13 as to musical sounds, 10 being the standard of each. The average of the 476 examined was 8.52.

Command of muscular contractility.—Idiots fail in the command of their muscles, and therefore they cannot control their limbs and direct them with the energy or precision of others. Hence they often walk with a waddling gait, and they make poor mechanics for want of power to use tools and strike with exactness. The average of the 444 examined was 8.33 to 10 when compared with other persons.

Dynamic condition of the body refers to "the general vigour of health as manifested in the ability to put forth muscular strength. 504 were examined to ascertain this, and the average was 7.88 to 10 as compared with other persons of their age."

Probably both the last averages are too large. Dr. H. very properly says, that the former is too high. If a more careful examination could be made of the power and muscular control of these idiots, with tools that require precision of action, and with protracted labour that requires continued effort, a different and lower result would be found in regard to them.

Sensibility to the musical sounds, like other powers, is very various; some have none; others have it in a high degree; one is marked 18, almost double the average of men, and there are all grades between them. Yet idiots are generally dull in this respect, and the average of the 300 who were examined

was only 6.3, less than two-thirds of the power that is found in the rest of mankind.

Skill in the use of language, which is often made the test of intelligence, is generally very small in this class of persons. A few enjoy it as other persons. Of the 452 who were examined, one is marked as high as 13, one 11, and ten are marked 10, and a very few 9 and 8; the rest are lower, and four have no language at all, and are therefore marked 0, and thirty-one are but little better, using only a few monosyllables, and are marked 1. The average of the whole 452 is 5, one-half the skill of the rest of mankind.

Ability to count is another test of power which was applied, and by which they were found wanting. Many cannot count at all, they do not see the difference between 2 and 3. Many can count 1 and 2; if we give them one block and ask how many they have, they may answer one, and then two when we add another; but when we add a third and a fourth, they still do not see more than two. 461 were examined with this view, and 5 had no conception of numbers, and are marked 0. 157 had some power, though in the lowest degree, and are marked 1. On the opposite extreme, six are marked 10, the usual average. One is marked 13, two 15, one 16, and one 18, having a power in the use of numbers which would be deemed extraordinary, even among those who are sound in mind.

"No 175 has little use of language. He is marked but 6 in that column; his intellect is very limited; he is, to all intents, an idiot; yet he has an astonishing power of reckoning. Tell him your age, and he will, in a very short time, give you the number of minutes. He is marked 18; he should, perhaps, have been marked higher." The average of the whole 461 is only 3, less than a third of the power of men of good condition.

Some idiots are unable to *fix their eyes upon small objects*, they stare and gaze but they do not see with distinctness. The image of the object is formed on the retina, but no exactly corresponding sensation is excited in the brain. In this power there is less deficiency than in others; 367 of 442 have the average power of fixing their eyes, and are marked 10; nine have it in an unusual degree, and are marked 11. The average of all is not given, and probably it would not fall much below that of other men.

Size and form of the head.—The idiots who were examined have somewhat smaller heads than others, but there is not so great a difference in this respect as is commonly supposed, as will be seen by the following averages of measurements. The first column of figures is the number of idiots who were examined, the second is the average measurement of idiots in inches, and the third is the average size of ordinary persons. M. and F. denote male and female:

Greatest circumference of cranium,	M. 99.	21.9.	22.0.
" " "	F. 59.	20.7.	21.5.
Diameter from root of nose to occipital spine,	M. 94.	7.5.	7.8.
" " " " "	F. 87.	7.3.	7.5.
Transversed diameter over the ears,	M. 94.	5.5.	5.8.
" " " "	F. 87.	5.3.	5.5.
Arc of cranium from root of nose to occipital spine,	M. 87.	13.3.	13.8.
" " " " " " "	F. 61.	13.0.	13.5.
Arc from opening of one ear over to opening of the other,	M. 89.	14.0.	14.3.
" " " " " "	F. 61.	13.5.	14.0.

Yet there is a very great difference in regard to the manifestation of the

several powers and propensities that are supposed by phrenologists to be connected with several parts of the head.

Dr. Howe was the President of the Phrenological Society, and is an accomplished scholar in that science. He is skilled in the practical application of its principles. His agent also was accustomed to cranial measurements, to craniological examinations, and to observing the connection between the cerebral developments and the mental and moral manifestations. Phrenology has therefore every advantage of skill, practice, and faith in its truth, to establish itself more firmly by means of this investigation, and to give further proof of the soundness of its doctrines, in the correspondence between the prominence or deficiency of certain parts of the cranium and the strength or weakness of certain powers, sentiments or propensities.

But the following table containing the result of Dr. Howe's observation shows, at least, that he has found no new proof of practical phrenology in this new field of inquiry.

Comparison of the development of certain parts of the cranium and of the mental and moral manifestations with the same in 1000 ordinary persons, those in the class of sound persons being assumed as 10.

Development of the lower frontal region of the cranium, - - -	9
Skill in the use of the perceptive faculties, - - - - -	5
Development of the upper frontal region of the cranium, - -	9
Skill in the use of the reflective or reasoning faculties, - - -	3
Development of the lateral region of the cranium, - - - -	8
Activity of the faculties of self-preservation, as cautiousness, cunning, &c.,	4
Development of the posterior region of the cranium, - - -	8
Activity of the social nature, or attachment to others, - - -	6
Development of the coronal region of the cranium, - - -	9
Activity of the moral sentiments, - - - - - -	6
Development of the region of the cerebellum, - - - -	7
Activity of the amative feelings, - - - - - - -	14
Average activity of the animal nature, estimated by the developments of amative feelings, the dynamic condition of body, and the consumption of food.—*Second Rep., Appendix*, p. 52.	10

For ten of these statements, 116, and in the eleventh, 114, in the twelfth, 70, and in the thirteenth, 115 idiots were measured and examined, and these are the results, and they are generally corroborated by the measurements and examinations of most of the others.

The average development of the several parts of the cranium of these idiots is, in comparison with that of sound persons, as forty-three to fifty—that is, nearly as large. But the average power of the moral and mental faculties supposed to be connected with them, as compared with the same faculties in ordinary persons, is as twenty-four to fifty, less than one-half.

But, on the contrary, the cerebellum, which has as much smaller proportionate development as seven to ten, is connected with moral manifestations which are all equal to, and some much larger than the same in men whose cerebellum is of the ordinary size. The activity of the amative feelings is as fourteen to ten, and the activity of the whole animal nature in these idiots is just equal to that of others, or as ten to ten.

This great deficiency of power, in one case, may just be what a phrenologist would expect from the small deficiency of cerebral development. We are not sufficiently acquainted with the minutia of this science to determine what gradations of power should accompany certain gradations of development of the brain.

Nor are we prepared to say, whether the excess of the amative feelings ought not to be expected from the diminished cerebellum. We make no deductions from these facts. This we leave to those who wish to establish or disprove the phrenological system from them. We have no desire to do either. We will only say, that these facts come to us from unquestionable authority, whose principles and habits would lead him to give due attention and weight to all facts that can have any bearing upon this science, but whose impartiality and regard to truth impel him to state every fact precisely as he finds it, whatever may be the conclusion to which it may lead.

Dr. Howe says,—"It may be stated here, in general terms, that the result of this examination and measurement shows, that no dimensions of the head, except extreme diminutiveness, and no shape whatever can be relied on as criteria of idiocy. A few of the worst cases of idiocy are those in which the head is normal as to size and shape. Nevertheless, the tables show, that, taking the aggregate of all the cases, an obvious relation is seen between the size and development of the cranium, and of its different parts, and the amount of intellectual power and of the different kinds of mental manifestation."—*Second Rep.*, p. 65.

An inordinate appetite ranks high among the propensities of the idiot's animal nature. More than a quarter of those examined consumed double the usual quantity, and some were insatiable with any amount of food. The average of the whole is fifteen to ten, as compared with the food of other persons.

In some the excessive eating was enormous. One child of five years was in the habit of taking a gallon of milk daily, and "one boy of thirteen has been known to drink six quarts of water a day," and another, after being reduced and limited as to his food, now consumes just double the average used by others.

The manifestation of the amative feelings is the saddest part of this whole picture; it reveals oftentimes the cause and sometimes the terrible consequences of idiocy. In seventy idiots who were examined, this propensity has a power, compared with that in sound persons, as fourteen to ten. "In some cases it amounts to perfect mania," and it continues long after the period of youth, even into old age. One person, sixty-six years old, is given now to open and shameless masturbation. Another of sixty-three is given to "excessive venery," another of sixty-five has been masturbating for forty-five years, because, in these cases, although "the physical power breaks down, the dreadful propensity continues unabated." Among idiots masturbation is a very common vice; out of 389 idiots who were examined, 204, of whom seventy-five are females, are known to practice it frequently. Cases were discovered of even little children addicted to this destructive habit, and worse than this nineteen little children were countenanced in this practice by intemperate, foolish, or degraded parents or nurses, and even some took satisfaction in this evidence of their children's precocity.

Physical condition.—Idiocy is often connected with other defects. Of the 574 idiots, 21 are blind, or have deformed eyes, 12 are deaf, 23 have deformity of mouth and nose, 54 have deformed hands or feet, 96 are paralyzed in some parts, 14 are torpid in feeling, 125 are subject to fits; convulsions are produced in 3 by use of tobacco, and in 29 by anger; faintness, nausea and vomiting are produced in 7 by fright. 491 out of 497, who were examined, are scrofulous.

Degree of ability to support themselves.—In the long table of individual idiots, in which is stated in numbers the degree of comparative ability of each one to support himself or herself, 13 are said to be able to do nothing, 48 can do one-tenth, 75 two-tenths, 96 three-tenths, 138 four-tenths, 175 five-tenths, and 32 six-tenths of the amount of labour sufficient for their support.

And the average ability of the whole is a little more than one-third sufficient for this purpose.

There is some discrepancy between this statement and that which we quoted before, in which it was stated 220 are as helpless as children two and seven years old. But probably this might be explained by the author. Perhaps this tabular and numerical statement refers to the possible condition and power of the idiots, when under proper guidance, and the former statement to their present condition and power unaided by others. Nevertheless both go to establish the same principle, the dependence of this class of persons on others for their support.

There is another element to be included in this estimate, that is, these persons can do as much as is herein stated, "under the management of discreet persons." Alone, their earnings would be much less and probably in most cases nothing; and when under the care of indiscreet persons, as are the parents of most of them, they do little or nothing towards their own maintenance.

Pecuniary circumstances.—These idiots are mostly the children of poverty. Of the 529 whose pecuniary condition was ascertained, only 22 had property of their own, and 62 belonged to wealthy families, 225 are members of poor families, and 220 are public paupers.

Age.—200 of these are under and 374 over 25 years of age.

Dr. Howe thinks favourably of their *capacity of improvement.* He says "that 196—almost the whole of the younger class—and 272—more than three-fourths of the older class—are capable of being improved in some degree and raised somewhat from their present miserable condition.

The causes of idiocy are matters of the greatest interest. Why are so many, why are any human beings found in this low, wretched and dependent condition?" This is a question that ought to interest the physiologist, the philanthropist, and the political economist. The causes of this low degradation of humanity should be ferreted out, and, if possible, removed, and the increase or the future production of idiots prevented.

Not knowing what are the necessary causes of this condition, we must be content with learning what are the preceding or co-existing events or circumstances, that, by their general or universal precedence to, or connection with idiocy, may be presumed to stand as causes. In this matter, Dr. Howe has done a good work. Without pretending to settle this question beyond all doubt, he has thrown much and valuable light upon it. He inquired into the history and condition of each case. He ascertained the character and health of the parents, the early and subsequent health of the subject, his or her organization and propensities, his or her habits, exposures and indulgences; and the result of each inquiry is stated in the table of his report.

The causes which produce idiocy—which prevent the development of the ordinary mental and physical powers, that are essential to normal life, or impair or extinguish them after they have become partially or entirely developed —are probably many and various.

The first thing to be observed is the "low condition of the physical organization of one or both parents."

It is not our intention now and here to give a dissertation on hereditary character or the transmission of qualities from parent to child. This subject requires more time and space than we now can give to it. Yet we hope ere long to see it discussed in all its bearings here or elsewhere, and the connection of generations explained so clearly, that the world may be warned and

put on its guard against every habit or action that may prevent the perfectness of health in the children.

We would merely say in passing, that we believe that parents can give to their children no other qualities or powers than those which they themselves possess, and that, whatever may be the condition of either parent when the germ, or the element, or the pabulum of life is given to their offspring, that condition or the peculiarity of organization which is susceptible of that condition will probably be transmitted to the child.

Dr. Howe has great faith in this principle, and rests much of his argument and explanations upon it; and he has shown so many facts to corroborate it, that it is not easy to withhold our confidence in his reasonings and conclusions. He says, "if ever the race is to be relieved of our tithe of bodily ills which flesh is now heir to, it must be by a clear understanding of, and a willing obedience to, the law which makes parents the blessing or the curse of the children; the givers of strength and vigour, and beauty, or the dispensers of debility, and disease, and deformity."

We have already shown, that very few of these idiots, whose history was ascertained, were the children of healthy parents. If they inherited any constitution from their progenitors, it was a feeble one at least; and in many instances, there was a positive tendency to disease or weakness. Many idiots are the children of idiots or simpletons. Some whole families of these are idiotic, and others are mixed, being in part idiots and in part simple or weak-minded, and others are sound.

Fifty idiots were discovered whose parents were one or both idiotic or insane.

Forty-five parents have each two idiotic children; thirteen have three each; eight have five each; one has five; one has seven; one has nine; and one has eleven.

The report does not say whether, in any or all of these seventy families, there were other and sound children; nor whether in these cases both or only one of the parents were insane or idiotic. Another remarkable fact shows the hereditary tendency. "In fifteen families all of the children of the first marriage were idiotic or puny, while all those born of a second marriage of the surviving healthy parent with a healthy person were sound in body and mind."

The idiotic taint or hereditary tendency may be considered as the remote or predisposing cause which in many persons lies dormant, until it is stimulated to action by other and proximate or exciting causes, and then both together produce idiocy. Or, the hereditary taint, acting alone, may cause only weakness, which under the best influences and education may be counteracted, and thus the child may prove to be merely a weak-minded man; or under other influences, the child may grow to be a simpleton, or have some oddities in his character. But under bad influences, such as the care or neglect of weak, foolish, or wicked parents or associates, the child may become an idiot. In the same family there may be various exciting causes acting on the different children, and producing a corresponding variety of character among them. One child may be merely weak, another simple, a third odd, and a fourth idiotic.

Some of the children of tainted families receive the predisposition to idiocy from their parents, and carry it with them through life; but very careful management and judicious education avert all exciting causes, and these persons pass respectably through the world; yet they may transmit their hereditary taint to their children. Then this third generation, if not as well trained and

guarded as their parents, may meet with the exciting causes and become idiotic. Or, if they pursue the faithful course of their fathers, the taint may still lie dormant in them, and they may escape, but yet possibly transmit the taint to the fourth generation, who may or may not be idiots, according to their education and self-management. In this way we may explain the apparent irregularity of hereditary character, and the reappearance of idiocy, insanity, or other hereditary disease in the third or fourth generation, after the second or third has enjoyed a perfect immunity from it.

Idiocy, therefore, although a hereditary disability, does not affect every successive generation, nor all the collateral branches of the same generation. Hence we find idiocy scattered among the various individuals or branches of the same family, touching some and omitting others. In such families, forty-nine idiots had one near relative idiotic; nine had two; six had three; four had four; six had five; three had ten; and one had nineteen near relations like themselves.

The report does not state how many idiots were examined for this purpose, or whether any, or how many of the other 496 idiots were ascertained to have no relatives like themselves. We are, therefore, unable to make any deductions from this statement, as to the proportion of idiocy which may seem to be hereditary, or the proportion which may be entirely original in the subject.

Very few idiots marry. This is a blessing, and so far it is a safeguard to the race. Humanity requires that the succession of idiots should be arrested. Yet many weak-minded persons and some simpletons marry and leave another generation more weak or simple than themselves. Some persons who have been temporarily insane or demented marry and send their taint or their liability to one or the other of these conditions down to their children.

But, the most lamentable and certain, though less frequent cause of congenital idiocy is the lasciviousness of some female idiots, whose illegitimate offspring are almost always like themselves, idiotic and lustful.

Some persons, who are irrepressibly addicted to masturbation, are advised to marry, as a means of protection from this ungovernable propensity. This, probably, is very well for them; it generally answers the intended purpose; but it is a cruel thing for their children. It entails upon them, perhaps the same propensity, certainly a feeble constitution; often weak minds, and sometimes idiocy. Twelve of these idiots are the children of parents who were thus married. The other children of the same families, if there are any, if not idiotic, are probably feeble in body and mind, and enjoy a lower degree of life than the children of better or more healthy parents.

The near relationship by blood of the parents seems to be the cause of, or, at least, it is the precedent fact to many cases of idiocy. We do not suppose that this connection is, of itself, the cause of idiocy. But if there are any weaknesses, or defects of body or mind, or tendencies to disease, or oddities in the family, they may be overpowered, or cease to appear, in the next generation, if those who have them marry with strangers, and mix their blood and life with those who have not these peculiarities: and thus the children may escape the imperfections or liabilities that otherwise might have been entailed upon them. But, when two persons of the same blood and character unite together in marriage, their peculiarities are doubled in power by being combined in their children; and the odd or weak traits, which were subordinate in the parents, may predominate in their offspring.

In the course of this inquiry the parentage of 359 idiots was ascertained. In seventeen families the parents were near blood relations. In one of these

families there were five idiotic children born; in five, four each; in three, three each; in two, two each; and in six, one each. In these seventeen families ninety-five children were born: forty-four idiots, twelve scrofulous and puny, one deaf, and one a dwarf; fifty-eight in all of low health or imperfect, and only thirty-seven of even tolerable health.

The parents of Nos. 59, 60, 250, 251, were cousins, and had, besides these four idiot children, four that were deformed.

Intemperance of parents.—The habits of the parents of 300 of the idiots were learned, and 145, nearly one half, are reported as "known to be habitual drunkards." Such parents give a weak and a lax constitution to their children, who are, consequently, "deficient in bodily and vital energy, and predisposed, by their very organization, to have cravings for alcoholic stimulants." Many of these children are feeble, and live irregularly. Having a lower vitality, they feel the want of some stimulation. If they pursue the course of their fathers, which they have more temptation to follow and less power to avoid than the children of the temperate, they add to their hereditary weakness, and increase the tendency to idiocy in their constitution; and this they leave to their children after them. The parents of case No. 62 were drunkards, and had seven idiotic children.

Seven of the congenital idiots were the children of prostitutes; seven others were illegitimate.

The *condition of the mothers during gestation* may have some influence upon the health and character of the offspring. The commissioners made inquiry as to this matter in regard to as many as possible, and discovered that two of the mothers of the idiots were insane, two were drunken, sixteen were sickly and feeble, and seven of these last suffered from fright, one had fits and received a blow on the abdomen, during their pregnancies, and another suffered from violent parturition. All the children who were born from these gestations were idiots from birth, with the exception of two, whose mothers were sickly, and one whose mother was injured. These three became idiots afterward.

Attempts to procure abortion may be injurious to the child, even though it be carried through, and safely delivered at the end of the full period. At least seven children were made idiots, says the report, by these unsuccessful attempts. Young women thus sometimes try to get rid of their burden, or conceal their shame; not succeeding, they afterwards marry, and the child is born at the proper time, but is idiotic. Other children are successively born of the same parents, and give no evidence of ill health or unsoundness of mind. Several cases of this kind are among those alluded to. One woman had seven sound children, and another had six, born in wedlock, though the oldest child of each of them, upon whom abortion was attempted, was idiotic. —*2d Report*, p. 90.

Looking upon idiocy rather as a deficiency of power, or as a disability, than as a disease—as a negative, rather than as a positive condition—it is easy to suppose, that it may be produced by a single cause, or by the co-operation of several causes which would not individually be sufficient to produce this condition, yet each may contribute its portion of influence to produce this deterioration of mental and physical power, and aid in making the child an idiot. Case No. 89 is an idiot of the lowest kind. He cannot walk, or hardly creep; he cannot feed himself with a spoon; nor can he speak. He has, apparently, no intellect. His father was intemperate, and was nearly related to his wife by blood. Her family were tainted with idiocy, as she had an idiotic cousin. She was much terrified and distressed in mind during the

early part of her pregnancy, and was sick, and carried her child with much difficulty through the latter part, and, "finally, her confinement was very long, protracted, and painful." Possibly, any one of these circumstances,—the intemperance, hereditary taint, intermarriage of relatives, the fright, illness, or difficult parturition, occurring alone, would not have produced idiocy in this case, for the same parents had other children that were not idiotic; yet any one of these may have the effect very materially to diminish what would otherwise have been the bodily and mental vigour of the child, to lower his tone of life, and carry him so far toward idiocy: and thus the added or combined effect of all these depressing causes may be sufficient to produce the idiocy that was manifested in the offspring.

If, as we have supposed, the parents can give to their offspring no other constitution than that which they possess at the time when they impart their life to the child, then the low organization, the ill health, the folly, the wickedness of the parents, or whatever reduces their power of body or mind below the normal standard, must prepare the way for a still greater deterioration or lower degradation in their children. If, then, these hereditary weaknesses in the children are not overcome by proper training, or, if their hereditary tendencies are not resisted and counteracted by the force of proper education and management, by the cultivation of the highest health, and the avoidance of every depressing cause acting on life, and of every exciting cause of disease or idiocy, these children will transmit to the next generation a lower degree of life.

These causes existing in the parents produce idiocy in the children, or that feeble and imperfect organization upon which, when other exciting causes may be added, idiocy may supervene.

Besides the hereditary taint or depression of constitution, there are many personal causes which operate directly upon the subject, and produce original idiocy in him.

Masturbation appears to be the most prominent among these depressing causes. The habits of 389 idiots were examined in regard to this matter; and 204, more than half, were found to be addicted to it. And, what is still more worthy of notice, several children—two of four years, one of seven, two of eight, five of nine, one of ten, two of eleven, three of twelve, and one of thirteen, seventeen not yet fourteen years old, were given to this disgusting and exhausting habit. No. 447 is stated to have been "healthy and intelligent until taught masturbation at six." No. 343 is only nine years old, and has been addicted to "masturbation *many* years."

In some this habit is irrepressible, and in some it is "openly and shamelessly indulged." It does not always cease with youth, but is, in many, continued far beyond the middle age; eight idiots between 50 and 60, nine between 60 and 70, one 78, and one 80 years old, are reported as still addicted to this vice.

The venereal appetite, either from original organization, or from frequent provocation and indulgence, is very strong in idiots. Besides the many who are reported as masturbating, or as open prostitutes, fifteen are reported as "very lustful," or given to "excessive venery;" and even four idiots, who are more than 60 years old, and one nearly 70, indulge in this vice. One of 63 is given to "shameless venery," and another of 64 is "still lustful to excess."

Intemperance and fits are also prominent among the supposed exciting causes of supervened idiocy.

These habits and conditions of the parents and progenitors of idiots and of the idiots themselves, are thus stated, not as the entire and unquestioned

causes of their present low state, but as the probable causes, and such as are supposed to be so by the families or acquaintances of the idiots.

Besides the several items which are arranged in forty columns and registered against each individual, as before stated, there are also some other remarks, which could not be so easily classified. We are unable to give any farther analysis of these, and yet we offer some quotations as specimens.

"No. 57. Supposed cause, violence during parturition, sickly gestation; subject to fits till 14.
58. Supposed cause, drunkenness of mother in gestation.
59. } Parents related, and subject to insanity. Of 8 children, 4 are
60. } idiots, and 4 deformed.
61. Parents intemperate.
62. Parents related; had 16 scrofulous children, 3 of them idiots.
63. Brother to 403; parents drunkards.
64. Supposed cause, sickly gestation.
65. Father drunkard; and mother scrofulous.
66. Parents scrofulous and sickly."

"162. Deformed, gluttonous, and pachydermatous.
163. From masturbation and gluttony.
164. Insane and intemperate at 20 years of age.
165. Full of sores, and always puny; skin pachydermatous.
166. Salivated in infancy; effects still continued.
167. Mother had fits during gestation, and received a blow upon abdomen.
168. Mother and grandmother scrofulous; nephew to above.
169. Fits in childhood, and formerly a drunkard.
170. Mother a simpleton. He is given to masturbation and venery.
171. Scrofulous and deformed; growth of bones arrested early.
172. } The parents of these were simpletons, cousins, and drunkards;
173. } have 4 children foolish."

"339. Father, drunkard; and the race all scrofulous.
340. Mother, insane; cousin, idiotic.
341. } Brothers; only children of a scrofulous mother and a drunken
342. } father; masturbation and fits from 10 years old.
343. Father, intemperate; masturbation, many years.
344. } Masturbation; very scrofulous breed.
345. } Brother of the above.
346. Very scrofulous breed.
347. Gluttonous; parents intemperate; mother a prostitute; sister a simpleton.
348. Very scrofulous mother; father has healthy children by another wife.
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These show from what a low and degraded race most of the idiots have sprung, and what is their wretched condition now. Idiocy is thus so generally connected with, or produced by, the depressing causes acting on the health and life, with the exhausting habits, circumstances, or exposures that have nearly or remotely gone before it or immediately coexist with it, that it may be considered as merely the last step in vital depression.

In the long line of humanity, there are infinite numbers of degrees, from the highest, where is perfect health of body and mind, to the lowest, where is idiocy. Whatever wasting habit, circumstance, or exposure, such as intemperance, debauchery, gluttony, or other depressing cause, acts upon a person standing in any of these degrees, exhausts some of his vital power, and carries him downward, more or less, toward idiocy, and he is thereafter a lower man, weak-minded or simple, or foolish, or idiotic, according to the force and protraction of the depressing cause or causes.

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It is to be regretted, that this commission could not have extended its inquiries through the whole state, and revealed the full extent of the misery and degradation that have thus fallen upon humanity. But this investigation was established only for a definite purpose, which was to ascertain the number and condition of the idiots, and also whether these could be improved, and whether enough of them were teachable, to justify the establishment of a school for them by the state. The government justly inferred, that the five hundred and seventy-four idiots, who were examined, and whose condition and character were learned, were sufficient to indicate the character of the whole, and, therefore, discontinued the commission, and proceeded to provide the means of educating them.

Low and disheartening as is the picture which we have here given, of the mental and physical condition of idiots, it is not without hope. Dr. Howe thinks that almost all of them—488 out of 574—are capable of improvement, to a greater or less extent.

Two strong inducements for public action or interference to relieve or diminish idiocy now present themselves. 1st. The enormous expense of supporting fourteen hundred persons—about one-five-hundredth part of the whole population of this commonwealth—in a state of idiocy: and 2d, the motives of humanity, to give, if possible, to these wretched creatures some idea of responsible life, some means and power of self-sustenance, and some self-respect.

There are two modes of action pointed out. One attempts to remedy or mitigate the evil by educating such of the idiots as can be provided with the means; the other strikes at the root of the future idiocy, and endeavours to remove the causes and prevent the recurrence of the disability hereafter. But we must confess, with great pain, that weighty as is the task to do the first, greater and more hopeless is the last. It is far easier to teach these stupid idiots, even to create intellect where it does not seem to exist, than to reform the morals of men and women, whose habits or indulgences lead to idiocy in themselves, or in their children, or to impress upon the world the necessity of looking only to the interests of the next and future generations in their marriage contracts, and in the management of their own persons.

The extinction of idiocy must be a work of ages. Nevertheless, it can be accomplished in the course of time. The causes that weaken or corrupt the human constitution and produce ill health or tendency to idiocy, or idiocy itself, may be removed. The successive generations of the weak, the unhealthy, and the tainted, may be each improved, and raised, and strengthened in some degree. By carefully educating the children of the feeble and corrupted families, by guarding them against the errors of their parents, by teaching them to avoid the exciting causes of idiocy, the hereditary taint may be kept dormant, and even diminished, until finally, through the course of successive generations, it shall be extinguished, and hereditary idiocy appear no more.

For the education of idiots there is encouragement to hope. The experiments which have been made in France, Switzerland and Prussia, prove, that many of these, who otherwise would be idiots of a low order, may, by proper training, be raised to such a condition, that they may live in, and enjoy the comforts of, their families, and that others may be made self-dependent and pass respectably and happily through life.

This, however, requires a peculiar kind of training. The usual influences of home, and especially of the ordinary homes of idiots, and the teaching and discipline of common schools, are not sufficient for the education of this class

of persons; they must have schools, teachers, and apparatus peculiarly adapted to their capacities and powers.

We believe that there were, until lately, no such schools in America, and that all the idiots of this continent were left to grope their way in their original darkness and degradation, except a few rare cases whose intelligent parents provided the extraordinary and proper means for their education.

The Legislature of Massachusetts, at its last session, after receiving these reports from Dr. Howe, appropriated the sum of twenty-five hundred dollars annually for three years, to educate ten idiots, in order to try the experiment; and the whole was placed under the general direction of Dr. Howe. Mr. James B. Richards was selected as a teacher, and went to Europe to visit the schools which are there in progress, and to learn their method of training and educating idiots. Mr. R. returned in September last, and in October opened his school at Boston with four idiots, and has now nine.

Although nothing decisive as to the extent of the power or the capacity of idiots, can be inferred from this small experiment, and the short time during which these few have been under discipline and instruction, yet enough has been done to show that even these stupid and apparently unimpressible children can be roused, and taught and influenced.

To form any proper notion of their progress, it is necessary to know their condition when they came to the school. One boy of 14 was brought from a poor-house, where he had always worn women's clothes. He is now dressed as other boys are, and enjoys his new garments, and uses them as properly as they do. He could not go up or down two steps, without getting upon his hands and knees; now he walks up and down, though with some hesitancy, in the common manner. Five of these boys had no control of their urinal or alvine evacuations; now they control them during the day, and mostly during the night. They could not be trusted to feed themselves, and some would steal food from the kitchen, or elsewhere, and one would devour the offal that was set aside for the swine. Now, they all eat as other boys, under the supervision of their teachers, who determine the quantity of their food. One who had no use of his feet can now walk with assistance. Within the first month, one boy of 9 years learned to throw wood from the ground on a pile, and another made still farther progress, and learned to pile it straight, laying the sticks parallel with each other. They learned to climb a ladder on the under side with their hands and feet, and when they reach the top, they can turn around one of the rails to the other side and return by the upper surface. They could not walk on either side of the ladder when they entered the school in October.

They had no conception of numbers, or of the size or form of objects. Now some of them can count as far as *six* or *seven*; they understand the difference between a square and a round object, and will select a quart or a peck, or other measures, when asked to do so.

In their whole appearance and manner, there is more of self-respect and intelligence, and activity, and one cannot fail to observe the very great difference in the expression of their countenance, when comparing their daguerreotype likenesses, which were taken when they entered, with their faces as they now appear.

It will not be suspected, that we make these statements as proofs of great success or progress, but only to show that the beginning of the experiment offers sufficient encouragement for perseverance; that the idiot's mind is not entirely blank; and that he is not, like the brutes, immovably fixed in present low rank, and irrecoverably doomed to remain there in darkness and degradation forever. E. J.

BIBLIOGRAPHICAL NOTICES.

ART. XII.—*A Paper on Epidemic Meningitis*, read before the Medical Society of Montgomery, Alabama, in 1848. By S. AMES, M. D. 8vo., pp. 58.

IN this well drawn up paper, Dr. Ames has presented an interesting account of the epidemic cerebro-spinal meningitis which prevailed in Montgomery, Alabama, in the winter and spring of 1848.

The term cerebro-spinal meningitis he considers not to be strictly applicable to the epidemic described by him; the symptoms and morbid anatomy of the malignant forms especially, showing that the substance of the brain, if not of the spinal marrow, was almost invariably involved. He believes that there are good reasons for supposing that the same was the case in the epidemic form of the disease as it occurred in France. Thus MM. Tourdes and Forget mention the existence of hyperemia of the brain in, Dr. A. believes, every instance in which the condition of that organ is noticed. While the occasional observation of one of the products of inflammation, viz. softening, and in all the fatal cases, the occurrence of symptoms, such as abnormal sensibility and muscular motions, delirium, coma, &c., which, being observed in a disease having a constant excess of fibrine in the blood, may be considered as unequivocal evidence of inflammation of the nervous substance—at least so long as there is no proof that simple meningitis can produce them.

Dr. Ames commences with an account of the *anatomical characters* of the disease, drawn up from notes taken in eleven cases.

Brain.—The dura mater was the seat of abnormal vascularity in two cases—in one there being merely an abnormal development of vessels on its upper and lateral surface, on the left side; in the other there were red patches on both sides, and along the entire course of the longitudinal sinus, and also upon the portion covering the frontal bone just above its orbitar plates—the number of patches being greater on the right side. This appearance occurred upon the arachnoid membrane in one case only—in which there was a very delicate pink or carmine tint diffused over it, while its usual polish was unimpaired. The pia mater exhibited abnormal vascularity in every case. The vessels crossing the convolutions were uniformly red, numerous, and large in size; in several instances many of them were a line or even more in diameter. At the base of the brain and on the cerebellum the red vessels were equally numerous, but less in size. They were also found in great numbers on the walls of the ventricles, accompanied, occasionally, with spots of capilliform injection, resembling ecchymosis to the naked eye. In different subjects, spots of red ecchymosis were observed on the lateral walls of the third ventricle, the anterior wall of the fourth and in the posterior horn of the left lateral ventricle. They were also seen, in several cases, on the upper surface of the hemispheres, and on the cerebellum.

On cutting into the substance of the brain, besides the red points commonly present in cases of congestion and inflammation, there was invariably found an infinite number of red vessels, containing sometimes fluid, at others coagulated blood. These enlarged vessels occupied different parts in different subjects—in but one case were they absent in the hemispheres. They were seen, likewise, upon removing the membranes, ramifying over the base of the brain, and the floors and walls of the ventricles, as well as on sections of any of these parts. The gray and white matter had a pink colour, dependent on the presence of vessels that were separately visible—which, although never entirely absent, occupied different parts in different subjects. In two cases, the medulla oblongata was clotted interiorly with dark ecchymosed spots. Of these alterations the cerebellum partook, to a greater or less extent, in every case.

Circumscribed portions of the membranes were softened in seven cases—in four, on the exterior of the brain, including the inferior surface of the cerebellum, and in the remaining three, on the floor of the lateral ventricle.

In nine cases the brain itself was softened; in seven, in some part of the hemisphere, chiefly in the cortical; in three, in the medulla oblongata and pons varolii; in five, in the fornix and septum lucidum; in one, in the walls of the third ventricle and canal leading to the fourth; in another in the corpus callosum and outer semi-circular rim of the left corpus striatum; in another, in the optic nerves, the commissure and the tractus opticus—in two cases, in the crus cerebri, and in one, in the cerebellum.

The arachnoid membrane was thickened and opaque, where it covers the anterior sub-arachnoidean space, in three cases, and where it covers the posterior sub-arachnoidean, in one case. There was an appearance of thickening in other places, but this was not certainly ascertained by separating the membrane from its connection.

In ten cases there was an effusion of yellowish-coloured matter, showing under the microscope an abundance of pus and lymph globules, on some portion of the membranes covering the exterior surface of the brain. In the greater number, enough of the effused lymph was coagulated to give some cohesiveness to the morbid product, but not enough to give it the appearance of an organized membrane. In appearance and consistence it resembled a very loose coagulum of fibrin. It was always found beneath the arachnoid membrane. In some cases it was so diffused as to look like a coating of cream upon the hemispheres; in others, it was confined, on the convex surface of the hemispheres, to the course of the large vessels between the convolutions. At the base of the brain it was in the greatest quantity, and met with, most frequently, about the optic commissure—it was here never absent. In one case it was found only at this part—the interstices of the convolutions being occupied by a serous fluid containing a few pus globules. In several instances, it projected from the arachnoid membrane into the sub-arachnoidean spaces, a line or more in thickness, and once the anterior cavity was occupied and even distended by it. It was found, also, on the corpora quadrigemina, the medulla oblongata, and around the third pair of nerves, where they penetrate the arachnoid membrane. The exterior surface of the cerebellum was frequently the seat of this deposit.

In nine cases there was an effusion of fluid into the arachnoid cavity. With this effusion, pus globules were mixed, in uncertain proportions, in every case in which they were sought. In two cases the effusion consisted chiefly of pus, mixed with blood globules. In the case in which the arachnoid membrane had a pink colour, a small quantity of the effused fluid, after standing a short time, coagulated. In one case, the cranial portion of the arachnoid was the seat of an organized false membrane. In some places this was soft, and adhered but slightly to the true membrane; but in other places, and in large patches, it was quite as strong as the arachnoid at the base of the brain, and adhered with a good deal of firmness. Its colour was rather a dingy pink, and from its surface, everywhere, pus could be scraped. In four cases, a morbid effusion was found in the lateral ventricles—in one, it consisted of a cream-coloured layer, semi-fluid, on a part of the left corpus striatum; in another, there was about a drachm of a greenish-coloured pus; in another, serum turbid from flocculi; and in another serum mixed with pus and blood.

Concrete fibrin was found in the vessels of the brain in several cases, viz: in the internal carotids, in two; in the basilar artery, in one, [a dark coagulum of blood was found in this artery in one case, and black fluid blood in another;] and in the longitudinal sinus and veins leading to it, in one; the concretion in this case occupied the entire length of the large vessel, and extended from it into the smaller vessels, from which threads of fibrin were drawn out to the length of several inches.

So far as the spinal cord was examined, the lesions, generally speaking, were the same as those met with in the brain in the same cases. The intense vascularity of the pia mater was always present, but the lympho-purulent deposit and the injection of the cord proper, were less common than in the brain. The spine was opened in its whole length in one case only. In this the dura mater

had the colour of muscle, which was uniformly diffused over every part of it, the internal surface being divested of its polish. It was thickened, also, in its whole length, but not equally; its arachnoid covering was also thickened in the parts which were separately examined after maceration. The cervical portion of the cord was softened in every part; presenting, in colour, various shades of white, yellow, and red—the filamentous portion exteriorly being reduced to a disorganized pulp, which came off with the pia mater, and adhered to the finger when touched; the colour of this part, without being brilliant, was a pure and beautiful white. This alteration was found principally in the upper part of the cervical expansion of the cord; nearer the dorsal portion, where the softening was rather less, the colour degenerated into a dingy yellow of several shades. The vesicular matter of this part of the cord was less altered than the fibrous. Although much softened, it would bear division with the scalpel; its colour, in some parts, was purplish, and in others, a more or less dull red. Besides this general colouring, a transverse section of the firmest part showed a number of red and dark spots and striæ. In the dorsal division, the gray matter was more softened than the white, the softening becoming more decided in proceeding downwards. The pure white colour was not observed in this division; the yellow tinge predominated, intermingled, here and there, with shades of dull red. The deposit of lympho-purulent matter was found chiefly about the roots of the anterior cervical nerves, being decidedly greater on the right than on the left column.

Abdomen.—In other parts of the body no lesions were observed, which seemed to be other than accidental, or particularly worthy of note, except those found in the digestive tube, and mesenteric glands. Here the alterations were so constant as, even in the few cases examined, to denote something more than a casual complication. The abdomen was opened in five cases. In all of them the mucous membrane of the stomach and ileum was reddened, thickened, and softened, to a greater or less extent. In the stomach, this alteration was found mostly in the smaller curvature, about the cardiac orifice; the parts immediately about the pylorus were not observed to be softened in either case. In the ileum, the examination was confined to the lower part, in extent from one and a half to four or five feet. In all but one, the membrane was most altered in that part nearest the cæcum; in the case excepted, the membrane was equally affected throughout the portion examined—about five feet; in four cases, including the latter, there were lesions of the agminated, solitary, and mesenteric glands. Enlargement of the first—with, in one case, their destruction by ulceration. The mesenteric glands were enlarged, red, and, in one case, softened.

Blood.—The blood taken from the arm, and, by cups, from the back of the neck, coagulated rapidly, forming a large and loose coagulum, in which all the corpuscles were rarely included. The serum separated from it very slowly, and in small quantity. The colour was generally bright—in a few cases, nearly approaching to that of arterial blood; it was seldom buffed. In thirty cases it was buffed only in four. It presented an excess of fibrin.

Symptoms.—Dr. A.'s analysis is taken from the notes made in sixty-four cases.

Mode of Access.—Premonitory symptoms occurred in forty-three cases. In all of these, pain of the head was a prominent and constant symptom; but was not so acute as after the attack was formed, excepting in cases where the premonitory symptoms were followed by a comatose state. The pain was generally continuous, but occasionally remittent or intermittent, with or without regular periods. It was seated commonly in the forehead, temples, over one or both eyes, or in the occiput. Sometimes it occupied the whole head, but was most acute at the occipital and frontal regions. In persons who had been subject to attacks of sick headache, the premonition assumed this form—it was only in such cases that nausea and vomiting, as a premonitory symptom, was observed. In some cases, to the pain in the head, were added pain along the course of the spine, particularly in the neck; soreness in the muscles or joints; facial neuralgia; and, very rarely, giddiness, with or without dimness of vision. The strength was but little impaired—but little complaint of a feeling of general malaise; persons seldom ceased from their ordinary occupations, before the

attack was fairly begun. Generally the appetite was but little affected; but, occasionally, it was lost or greatly diminished. In a few cases, the disease was developed in a relapse from intermittent fever, during the cold stage of the second paroxysm. The duration of the premonitory stage was very various, and afforded no indication of the severity of the ensuing attack. In eleven cases it lasted less than twelve hours; in eight, twenty-four hours; in five, two days; in six, three days; in four, four days; in three, five days; in one, six days; in three, seven days; and in two, over seven. In nineteen out of twenty-seven cases, the full development of the attack began between 12 M. and 12 P. M., including the former, but not the latter.

Mode of Attack.—In twenty-eight cases, of which eighteen have had premonitory symptoms, the disease was ushered in by some degree of chilliness, never amounting to rigor. The chill was followed in a few minutes, sometimes not for half an hour, either by a decided febrile reaction; a state of stupor more or less profound, with cool skin and feeble pulse,—or this condition of skin and pulse, without stupor. When there was no chill, the attack commenced by the sudden occurrence of a state of coma or apoplexy—a degree of stupor not amounting to coma, accompanied by a feeling of excessive debility, giddiness, dimness of sight, or double vision; or, by a sudden aggravation of the premonitory cephalalgia, accompanied by various changes in the condition of the pulse, skin, &c.; while, in a few cases, the premonitory headache increased gradually, day by day, with but little change in the skin or pulse, until at last the patient was compelled to take his bed.

The *state of the skin* was noted in fifty-seven cases. It was *dry* on the first day, in 42; having the natural temperature in 14—below this temperature in 17; and above it in 11. It was *moist*, on the first day, in 15; having the temperature natural in 4; below the natural in 3, and above it in 8. The dryness sometimes predominated throughout the attack, when it ran its course quickly. In these cases, it proved very unyielding to remedies, particularly so to emissions of blood. In several instances, patients were bled to the verge of syncope, and this repeated within an hour or two, without affecting it. In more than one instance, death took place, the skin continuing dry in the moribund state. Generally, however, the state of the skin varied a good deal in regard to dryness and moisture, in the progress of the disease; being dry or moist at different periods of the same day, or on different days, without any regularity, or apparent dependence on the action of the heart. The temperature was less changeable—frequently remaining without change during several days, and but rarely was any observed on the same day. The change in temperature seemed to follow certain changes in the pulse, from a weaker to a more active state. There was never pungent heat of skin; even when above the natural temperature, in most cases, it was still below ordinary febrile heat. The head was never warmer than the trunk—the extremities were very seldom cool when the head and trunk were warm. When the skin was generally cool, it was always cooler, or positively cold, on the feet and hands. In some cases, the skin was abnormally sensitive to the touch, particularly on the extremities—the scalp was sore in only one case. An eruption around the mouth (herpes labialis) was observed in three cases. Purple petechiæ, which did not disappear upon pressure, occurred in one case. In some cases, the face was flushed, and the skin clear; in others, the face was pale, and the skin sallow; the lips were always deeply coloured. In one case, at the beginning of the attack, the skin had a peculiar shining aspect.

The *pulse* was, in general, slower, smaller, and softer, on the first day, than in health, and very irregular in the number of its beats, the intervals between them, and their force, in the same, and in different subjects. The softness of the pulse was its most constant feature; in but one case was it corded or hard; it very rarely rose above its natural fulness. A pulse quicker than in health was still less common. In general, it was slower on the first day than afterwards; in the greater number of cases it was below 56—in many below 60, in others below 50, and in several below 40. The irregularity in the number of beats to the minute was remarkable and characteristic. In one patient it was 76 at 10 A. M.; 96 at 12 M.; 68 at 5½ P. M.; 96 at 9½ P. M.; 76 at 9¾ P. M.,

and so varying on the second day between 120 and 150. On another occasion, the pulse on the first day continually varied, during several hours, to some figure between 30 and 76. In a single case, the pulse, strong, steadily at 100, continued throughout the attack, which lasted three days, until half an hour before death, the period at which it was last counted. The slowness, softness, and irregularity of the pulse were observed in the very mildest attacks, as in the more violent or malignant; while, on the other hand, its smallness and feebleness were but little marked in the beginning, and during the progress of some of the most malignant cases.

In the more grave and malignant form of the disease, the *tongue* was broad and flabby, sometimes filling up the mouth so as to impede articulation, and becoming, by its pressure upon the teeth, indented around its entire edge. In one case, the tongue was so enlarged as partly to protrude beyond the teeth, and in a few others, the pressure produced on the thick edges, anteriorly, a line or raphe, as in the gums of the infant. The thickening and elongation were apt to increase shortly before death. The tongue was often coated over the whole of its free surface, always over the whole of the dorsum, and a part, at least, of its edges. The coating was usually of a pale ash or white colour, but sometimes yellowish; it was thinnest at the tip and sides, and became thicker backwards and towards the centre. When the coating began to give way, its edges became abrupt, and the clean edges of the tongue assumed the bright pink colour belonging to the alteration next to be described. There was always an abundant *flow of saliva*, generally more viscid than in health, and sometimes of the consistence of thick mucilage.

In other cases, the tongue was less obviously enlarged—it was generally broad, however, but not often thickened or indented by the teeth. It was always coated—but this never extended over more than three-fourths, sometimes one-half of the dorsum; it was very thin in front, and generally became thicker as it extended backwards. The uncovered parts, particularly the end and sides of the anterior two-thirds, had a bright pink colour—very peculiar and striking. As the disease advanced towards a fatal conclusion, it was not uncommon for the tongue to assume the condition first described. The tongue was never dry on the first day. In five cases, it became dry on the second, third, fifth, sixth, and seventh days.

Cephalalgia was absent throughout the attack in only one case in which there was sufficient consciousness to answer the questions proposed. Persons who had suffered from spasmodic or neuralgic headache, declared the pain in the disease under consideration as of a different character. Some described it as a continued painful roaring—others as a fullness and tightness, as though a band were tightly drawn around the head; or as if the forehead, crown, or sides were being crushed inwards. A greater number described it as darting and throbbing, frequent shooting through the head from behind forwards, and from side to side, with a violence causing the patient to cry out. In some, it occupied the temples, superciliary ridges, and frontal region; in others, the back of the head only. In the larger number it was felt over the whole head, being most violent in some one of the places mentioned, or under the parietal bones. The intensity of the headache was not proportioned to the severity of the other symptoms. In some of the worst cases, the sense of pain appeared to be obtunded by the oppression of the brain; but it was slight also in cases of equal malignity unattended by coma; while in some of the mildest cases the pain was most intense. It seldom continued during the attack, but disappeared towards the close of the first, or on the second, third, or fourth days, generally to return after an uncertain interval. It was generally aggravated by an erect or semi-erect posture—in two instances, however, such a position afforded great relief. In a number of cases the pain was aggravated by pressure upon some part of the spine, chiefly the cervical.

Giddiness was rarely complained of after the first few hours of the attack. It occurred in but few cases, and was never a prominent or important symptom.

The *conjunctivæ* were generally injected—the eyes glittering and watery. In a few cases, chiefly among children, the conjunctivæ had a pinkish tint, without the appearance of distinct vessels. The pupils were dilated in seven out of

forty-one cases; in the others, they were either contracted or natural. In three cases they were insensible to light from coma, and in two without loss of consciousness. In both these last perfect vision was restored in a few hours; the patients died apoplectic. Double vision occurred in six cases; photophobia, in six cases; in a number of others, the ordinary light was disagreeable, but in far the greater number, the strongest light was not complained of.

In several cases, there was a profuse discharge from the nostrils of thick mucus, alone or mixed with blood. In one patient the sense of smell was lost in one nostril; in a few there was spontaneous deafness; in one of these the deafness occurred three times on the second day; each time lasting about three hours, with intermissions of about the same duration.

Some degree of *stupor*, amounting, generally, to *profound coma*, was present on the first day, in eighteen cases; in a few others it appeared on the second or third day. Most commonly, this symptom passed off within twenty-four hours, but in some cases not for two or even three days; generally to return at some subsequent period, varying from twelve hours to several days. Sometimes there was no return of it, though the disease was protracted to many days—there were cases again—those proving speedily fatal in which it did not remit. *Delirium*, with or without stupor, occurred, at some period of the attack, in twenty-four cases; it was never continuous, sometimes lasting but three or four hours, and rarely more than twenty-four. It was wild and furious in two cases, and playful in one; in a few, it was melancholy and pathetic. The mind was generally desponding and apprehensive. In all the more violent cases, there was forgetfulness of the events which transpired during the attack, frequently from day to day, and this whether delirium and stupor were present or not.

The patient generally laid upon his back with the lower extremities extended. In two patients, both comatose, a position was taken on the right side, and maintained with great pertinacity; in another in which there was continued opisthotonos, the patient for several days lay upon the chest and abdomen, with the head thrown backwards; in other cases, when the head was thus drawn back, the decubitus was on the side. Tonic contractions of the extensors of the back, with retraction of the head, occurred in three other cases. Retraction of the head was observed in a number of patients, without the extensors of the back being affected. The muscles of the neck, when not in a state of tetanic contraction, were stiff and sore in thirty-five cases. In a few, the stiffness was confined to the sterno-mastoid muscles of one or both sides; but in others, the extensors were principally concerned, the head being kept steadily in its natural erect position, either involuntarily, or voluntarily as the easiest position.

Quivering of the muscles of the face, tremors of the hands, and embarrassment of the movements of the arms, tonic contraction of the flexors of the forearm, and of the recti-muscles of the abdomen, were, one or more of them, observed in some cases; subsultus tendinum, picking at the bedclothes, and reaching after imaginary objects, with other typhoid symptoms, occurred in three protracted cases. Strabismus occurred in nine cases; convulsions, coming on towards the close of the attack, in three cases; and at the beginning of the attack, in one case. An incomplete paralysis of the right eyelid occurred in one case, and of one entire side of the body in another—one of the mildest, in which the previous symptoms indicated no serious affection of the brain or spinal cord. In a few cases, there was a general soreness of the muscles, causing a great deal of pain in moving.

Pain in the cervical portion *of the spinal* cord occurred in twenty-three cases; in the dorsal in eleven, and in the lumbar in six. In all but two the pain was slight, the patients making no mention of it until they were questioned, and others complaining of it less than in ordinary remittent fever. Pressure applied to the cervical portion of the spine produced pain in the head, frequently darting to the forehead, eyes, and temples, in twenty cases. In two, during a state of deep coma, pressure on the upper dorsal vertebra occasioned great restlessness and apparent distress. Pressure on the cervical vertebra produced also pain at the top of the sternum—on the dorsal, pain in the middle of the sternum, at the epigastrium or about the umbilicus, as it was made higher or lower. Sometimes pain was not experienced in the part pressed on, but only

at one of the places mentioned above. The pain was often violent, and continued sometimes for several minutes.

Vomiting occurred in fifteen cases. In the beginning of the attack in two; at a later period, on the first day, in eight—not till the second day in three, and not till the third day in two. There was *nausea* without vomiting in three cases; one on the first, and the two others on the third and fourth days.

The *bowels* were either natural or constipated in all but one case, in which diarrhœa occurred on the sixth day, probably from the use of tartar emetic for a pneumonic complication. There was acute pain in the abdomen in three cases, and tympanitic distension with tenderness on pressure in one occurring on the third day.

Desire for food, more or less urgent, was expressed in eight cases, when it could not be considered a sign of convalescence, or of its near approach. The desire was by some evinced on the first or second day; in others, protracted cases, on the eighth or ninth day. In two or three cases, it was rather urgent, and continued so, in one, for several days.

The *respiration* was without stertor, excepting in two cases. In only five cases was the number of respirations below twenty-one to the minute; in two of them it was twenty, and in one fell as low as eight; in five, it was between twenty-six and thirty; in eight, between thirty and forty; in five, between forty and fifty; and in four, from fifty-two to fifty-six; generally, the breathing was regular. It was suspirous in one instance.

The *expression of the countenance* was exceedingly various and variable, affording little or nothing which was available in diagnosis or prognosis. When neither natural nor idiotic, the latter being observed in two cases after they had been long protracted; the various shades of expression were wild, anxious, or distressed, melancholy, heavy, and lastly, but rarely, brilliant and pleasing. Several of these varieties of expression were observed in the same patient at different periods of the attack; occasionally, at different periods of the same day.

Extreme *emaciation* occurred in but a small proportion of even the protracted cases. In the majority of cases, there was none perceptible. In one it took place suddenly, without excessive evacuations, on the accession of an acute and very formidable gastro-enteritis, produced probably by tartar emetic.

Duration.—The disease continued from fifteen hours to fifty days. Three cases terminated on the fifth day; none on the seventh, and three on the ninth; while there were sixteen which terminated on the second and third, and nineteen on the fourth. Besides these, there were two which proved fatal within the first twenty-four hours, and two which lasted over forty days; one terminated on the fourteenth, and nine between the fourteenth and thirtieth; making fifty-five cases in all.

Dr. Ames divides the cases of the disease observed by him into two general classes. The congestive and the inflammatory.

Of the *Congestive class* he makes two divisions—the malignant and the mild. The affinity of these to each other was manifested by such symptoms as distinguish this class from the inflammatory, viz., the constant presence of a cool skin, a small and feeble pulse, and a characteristic tongue; broad, flabby, and coated with a white, yellow, or pale ash-coloured deposit. The malignant form was distinguished by the frequent occurrence of chilliness in the forming stage; great prostration of strength; the invariable occurrence, for the most part on the first day, of coma, or a very marked degree of stupor, delirium, or stupor and delirium; considerable retraction of the head backwards; embarrassment in the movement of the muscles of other parts of the body; a wider range in the frequency of the pulse, and its more changeable character otherwise—the greater quantity and viscidity of the saliva, and the thicker coating of the tongue, and an occasional tendency to assume the symptoms of the inflammatory class.

Of the Inflammatory class.—In this class, Dr. Ames describes an intermediate group between the malignant and the mild, which he terms the *grave*. The affinity of these three forms was manifested by the symptoms which distinguish the inflammatory from the congestive class, viz., the uniform presence of a temperature of the skin above the healthy standard, a full and generally firm pulse, the tongue less swollen and flabby, and less coated. The *malignant* form was

marked by the early occurrence of delirium or coma, most commonly the former; great irregularity of pulse; tonic or convulsive contractions of other muscles than those of the neck; strabismus; occasionally amaurosis; a tendency to nausea and vomiting, and to a speedy and fatal termination.

The *grave* form was distinguished by the regularity of the pulse, never below 100 in the minute, except during a remission—by the contraction of the muscles being confined to those of the neck; sometimes to the sterno-mastoid of one or both sides. By the occasional occurrence of painful sensibility of the skin to the touch, and of the retina to light—by the occurrence of regular remissions, and by the absence of coma and delirium.

The *Mild Inflammatory* form was marked by the lower grade of the febrile excitement—the continuance of a good degree of strength, during the entire attack, however protracted—a tendency to turn into a chronic form—and by the absence of coma, drowsiness, delirium, and a cold stage. The disease was sometimes protracted to ten, fourteen, or even twenty-one days—the patients all the time being able to sit up, and to walk about a little. Even when apparent recovery took place within two or three days, there would still remain some confusion of mind; a sense of tightness across the forehead, or about the base of the brain, from one temple to the other; or, pain in the occiput or neck, upon any unusual mental occupation.

Each of these classes, with its several forms, is illustrated by numerous cases given in detail.

Remissions.—There was observed in very many cases of the diseases of both classes, a tendency to remission, at some period of the attack, varying from a few hours to several days from its onset; and frequently on the second and third days—days on which, also, the greater proportion of deaths occurred. They approached sometimes very nearly to intermissions; at others, they were obscure. Sometimes they were quotidian or tertian, and accompanied by remissions of fever, as if the meningitis were engrafted on an ordinary endemic fever. In other cases there occurred a remission in the cerebral symptoms, without any very obvious change in the febrile state—in others, again, the febrile symptoms remitted or intermitted without any abatement of those of the disease of the brain. There sometimes occurred, most frequently in the malignant forms of the disease, a decided amelioration of all the symptoms of the disease, which was occasionally the prelude of a rapid recovery. This was seldom the case, however, if the attack had lasted more than twenty-four hours; the remission being generally followed, after an uncertain interval of a few hours or days, by an exacerbation of all the symptoms, equal in intensity as before the remission. In a few cases a change of form occurred from the congestive to the inflammatory type—the stupor, coma, cool skin and feeble pulse, being exchanged for a state of reaction, a warm surface, and a full and strong pulse. The remissions were not regular in the inflammatory cases, particularly the grave variety.

Complications.—Inflammation of the fauces was observed in seven patients, five of whom had recently recovered from roseola, which was prevailing epidemically. Two had roseola with the meningitis; three bronchitis, and two pneumonia. Dr. A. remarks, that the affection of the mucous surface of the intestinal canal, and of the mesenteric glands, may be placed under this head, although the existence of the former in every case in which the parts were examined, and of the latter in four-fifths, might justify the inference that a tendency to disease in these parts constituted an essential feature in the epidemic. This point would have been more satisfactorily determined if the abdomen had been opened in all the post-mortem examinations. A typhoid state was assumed at a late period, in three cases. The earliest period at which this was noticed was about the tenth day. Dr. Ames does not consider it as designating a form of the disease in any way connected with its essential pathology. As the three cases recovered, the nature of the intestinal alterations is not known.

Diagnosis.—The symptoms by which the meningitis was distinguished, after some familiarity with the symptoms was obtained, were the following, viz: The cephalalgia, its seat, particularly when in the back of the head, and the peculiarities which distinguish it from other forms of headache. The state of the

tongue, particularly its enlargement, indentation, and gummy or pasty coating, and the bright pink of its edges. The physical characters of the blood—the pain in the neck, and stiffness and soreness in the muscles—muscular tremors, and other embarrassment of motion—traction of the occiput downwards—the state of the pulse, which was valuable as a diagnostic sign in both varieties of the congestive type, but only in the malignant varieties of the inflammatory type—delirium—rigidity of the large extensor of the spine—coma—the state of the pupil, and the injection of the conjunctiva, which last, though not so important as the others, was more constant.

Age—Sex.—Among eighty-five cases, there were twenty-two whites, viz: five years old and under, *one;* between five and ten, *two;* between ten and twenty, *eight;* between twenty and thirty, *three;* between thirty and forty, *three;* between forty and fifty, *two;* over fifty, *three.* Of the whites, ten were *males,* and twelve *females.* The blacks were sixty-three, viz: under five years, *one;* between five and ten, *six;* between ten and twenty, *fifteen;* between twenty and thirty, *twenty-four;* between thirty and forty, *ten;* between forty and fifty, *five;* over fifty, *two.* Of the blacks thirty-six were *males,* and twenty-seven *females.*

Mortality.—The mortality was confined to the malignant forms. In these, from the best information Dr. A. could get, it was about sixty per cent.

Locality.—The little city of Montgomery is situated on the left bank of the Alabama river, at the extreme southern convexity of a horse-shoe shaped curvature of the river. The bend nearly encloses several thousand acres of alluvial land which is subject to an annual overflow. The geological formation on which the town is built, following Mr. Lyell's division, is the *eocene tertiary.* At distances varying from fourteen to thirty miles, north and east, the tertiary forms an abrupt junction with the primary, consisting, at various points, of mica slate, gneiss, and granite. A belt of the cretaceous formation (prairie) running east and west, and varying in width from eight to fifteen miles, approaches within a mile of the southern and southeastern border of the town. Beyond the prairie, towards the south, the eocene tertiary is again found. On the western limit of the town, a range of hills takes its rise rather abruptly, and running first south, then east, and then north, forms an amphitheatre, which rises in some places 150 feet above the river bank, looking, from its northern aspect, on the river and the alluvial ground beyond it, and is crowned with a narrow strip of table land, beyond which, except on the eastern side, the ground again descends for several miles to a large creek, which empties itself into the river, several miles below or west of the town. A basin is thus formed with the hills on three sides, nearly, and the river on the other, having a sufficient inclination towards the latter to carry off the water which gathers during a rain, in rapid currents, and thus to secure, whenever a hard rain falls, a thorough cleansing of every part of the town. It is within the limits just described, and on the hills above, that the town is built; the greater part of the population residing below the range of hills. The residents on the sides of the hills, and on the level above, hardly comprise one-third of the whole population, which numbers in all above 4000 souls, a large part of which are blacks. The dwellings are built with ample space around them; there is no crowding, nor are the residents crowded within them, nor are there any accumulations of filth anywhere to be found—neither is there met with, within the city, any of the destitution of extreme poverty.

It was within the limits just described that the epidemic was chiefly confined. Whilst a large proportion of the residents below were attacked, there were but few cases among the residents on the sides of the hills, and still fewer upon the table land above. From the best information Dr. A could obtain, he found that 250 cases of the disease occurred within the town limits, of which not more than 100 occurred above the base of the hills.

The surrounding country, which is thickly populated, was remarkably exempt, at this time, not only from the epidemic, but from all other diseases. After the epidemic influence had exhausted its virulence in the city, and in a great measure subsided, the disease made its appearance on a large plantation lying eight miles southeast of the city, where nineteen cases occurred, a majority of which were of the malignant congestive type. About the same time it occurred at another plantation (prairie) some three miles south of the first, passing over an

intervening one, which, with the other adjoining ones, remained as free from sickness as at the same season in other years. After it had disappeared from these localities, it appeared on a plantation three miles west of the one first mentioned, where four cases occurred, all of which were of the grave inflammatory variety, and here the epidemic influence terminated. There were no apparent causes why the epidemic should have occurred on these plantations to the exclusion of others.

The disease made its appearance early in February, was most prevalent in March, and disappeared as an epidemic in the latter part of April. Three cases occurred at intervals of some weeks, after the first of May. An epidemic *roseola* preceded and accompanied the disease as long as it lasted, disappearing with it. This was the case on the plantations as well as in the city. At the same time other diseases common to the climate and locality prevailed, some of them to a very unusual extent. These were dysentery, diarrhœa, intermittent and remittent fever, various forms of neuralgia, spasmodic cephalalgia, catarrhal fevers and bronchitis.

Treatment.—*Blood-letting* was employed, with few exceptions, near the beginning of the attack, frequently and boldly, without regard to the state of the circulation—in the congestive as well as in the inflammatory forms. The quantity taken at one bleeding, or at several in quick succession, was sometimes very great—on one occasion the quantity taken at a single bleeding was forty-eight, and on another forty-four and a-half ounces. In the greater number of cases the entire quantity taken from adults, in one day, varied from fourteen to forty ounces—in twenty-six cases the average was found to be thirty ounces. The effects of blood-letting were not so satisfactory as might have been expected. Within Dr. A.'s observation they were never promptly decisive for much good or evil; the pulse in congestive cases rarely filled up, or became regular; in some instances, it became quicker and more feeble, during, or soon after rather a small bleeding on the first day of the attack. In the inflammatory form the same thing was occasionally observed, though in this form an improved state of the pulse was more frequently the immediate consequence of the loss of blood. The most common sensible effect, however, was relief of the cephalalgia—but this was not always observed. Still, prompt and free bleeding, in the very onset of the disease, in both the congestive and inflammatory forms, was, Dr. A. believes, beneficial in consequence of the time gained by it, for other remedies more obviously beneficial. The impression of the physicians of Montgomery generally, in regard to bleeding, we are informed, was one of disappointment.

Mercury employed to produce its constitutional effects, proved to be a more efficient remedy than blood-letting, as well in the promptness and permanence of its beneficial influence. If not always effectual, it was always safe, and the good obtained by it was more apparent and quite as permanent as that from all other remedies. In a few instances, however, salivation induced early in the attack, and kept up for several days, failed altogether in producing any perceptible influence—in some cases time was not afforded to effect salivation, and occasionally, though very rarely, the specific influence of the remedy could not be obtained.

Blisters to the upper portion of the spine were found in mild and grave cases seldom to fail in removing or greatly relieving the cephalalgia, even when bleeding had failed to do so. In the malignant varieties, also, the relief afforded by them was very great. In the congestive forms, heat applied to the skin generally, mustard plasters, and frictions with oil of turpentine, were frequently beneficial.

Potassa.—Dr. Ames remarks, that his experience in the use of this remedy is yet too limited to determine positively its value, but he has seen enough to induce him to continue his observations, and to recommend it to the attention of the profession. It was given to children in doses of from three to five grains, and to adults in doses of from ten to fifteen grains, repeated every two hours. No case proved fatal in his practice, or, as far as he can learn, in that of either of his professional brethren, in which it was freely and continuously employed. But it is to be observed, that, under any treatment, the mortality was confined to the malignant forms of the disease; that the remedy was given in but few

cases of this kind, and that other remedies of the most energetic kind were also administered along with it. The powers of the remedy were exhibited in a much less equivocal manner in the grave and mild varieties. In many cases in which there were no febrile symptoms, properly so called, present, the cephalalgia was speedily and permanently relieved, and in others its administration was followed by a prompt reduction of arterial excitement, and the removal of intense cephalalgia and other symptoms of head disease. In one chronic case of the grave variety, in which the patient was fast sinking into a state of dementia, convalescence began on the day that the medicine was first administered. This man had been bled, salivated and blistered without benefit.

Quinine, Dr. A. employed frequently in the grave variety, to which it seemed most applicable, and some times with partial success. When the disease was attended with a fever which was regularly remittent, the meningitis appearing as if it were engrafted on a remittent fever, quinine occasionally arrested the paroxysms, but more slowly and with greater difficulty than in other fevers. In other varieties, the remedy cannot be recommended; its use here, if not hazardous, never affording much encouragement to repeat it.

Emetics were but little used. *Cathartics* were frequently employed as adjuncts, and to effect particular indications, but were not relied on as curative remedies. In two instances a free catharsis induced by drastic medicine was evidently prejudicial.

Opium, Dr. A. does not consider generally safe in the inflammatory malignant variety, or that it was of any use in the congestive malignant form. In the other varieties, it was a safe remedy, and very valuable as an anodyne merely.

We return our thanks to Dr. Ames for his very excellent account of the epidemic form of cerebro-spinitis, as it occurred within the sphere of his own observation. We have presented a very full digest of his paper, from the perusal of which our readers will, we are convinced, derive a more correct idea of the pathology and general characteristics of the disease than from most other sources.

D. F. C.

ART. XIII.—*Anniversary Discourse before the New York Academy of Medicine.* By JAMES R. MANLEY, M. D. New York, 1849: pp. 36.

IT is more than three months since Dr. Manley's Address was delivered before the New York Academy of Medicine, and a large miscellaneous audience. It produced a lively impression at the time, which is fully justified by the printed discourse. In style, thought, and argument, it ranks much higher than is usual with compositions of the sort, and is in every way worthy of the reputation of its venerable author. It is remarkably free from cant, that vicious form of sentiment which mars so many of the literary efforts of our prominent orators and writers. It appeals to no prejudices, and flatters no self-complacency, but handles its subject with a direct, and yet polished, common sense, which denotes the scholar and the man of enlightened experience. We shall quote freely from the pages of this discourse, although, from want of space, less copiously than we could wish.

After showing how pregnant with ulterior mischief is the mismanagement of disease, Dr. Manley traces the evil to professional ignorance on the one hand, and follies claiming to be medical systems, on the other. He says:

"Between the rivalries of bold imposture, presuming ignorance, and calculating deceit, the great and essential landmarks which have hitherto directed to the best means for the preservation of health, and the relief or cure of disease, are in danger (for a time at least) of being broken down and trampled under foot of men, whose contempt of every thing like medical education is their surest passport to the confidence of their patients.

"It is scarcely to be expected that the medical profession, alone and unaided by public opinion, can correct the abuses *to which its own lax estimate of its duties has chiefly contributed;* but the hope may be indulged, that a reform commenced among its own members will not be without its influence in ena-

bling the community to form a judgment of the immeasurable difference between a well-instructed and conscientious physician, and the ignorant, impudent, and reckless practitioner, who monopolizes the confidence and emoluments of our vocation. Reform must commence where the abuses have had their origin, since it would be vain to expect amendment while the roots from which they spring are allowed, year by year, to gather strength, to bud, blossom, and diffuse their baleful influences.

"The standard of education in medicine must be elevated; then, and not till then, will physicians be enabled to resume that rank in society which they formerly occupied. The moral tone of the profession must become an object of more solicitude—essential truth must be the basis of the physician's moral."

This we believe to be the true doctrine; medical science cannot occupy the eminent position to which her hereditary and acquired wealth of knowledge and power entitle her, so long as her followers forget their homage and their duty. Nevertheless, we are far from indulging the hope that a return to their loyalty would be followed by a popular acknowledgment of our queen's supremacy; we fear there would still be found as many conceited wiseacres to sneer at our ancient art, as there are now to wag both head and tongue against other institutions consecrated by time and human reverence. In proof of this opinion, the English metropolis presents a striking example. Side by side with the most profound medical learning, and the most consummate medical skill, knavery lures its dupes with false promises, and folly with its catchpenny systems, while filthy hucksters of physic sweep the little vulgar into their net. In Vienna, too, with a state education of the most elaborate sort imposed on every physician, the most contemptible and absurd of all heresies is not only tolerated, but has actually committed to its infinitesimal mercies the lives of his majesty's subjects. "The people" are much the same in all countries, and are as fond of being deceived in despotic Austria as in "free and enlightened" America. In both countries they are utterly incapable of estimating the merits or demerits of the medical profession, and submit to be imposed upon, not in proportion to their lack of intelligence, but to the extent to which the law lets in upon them the legions of quackery. Why is it that in France there are, comparatively speaking, so few quacks with any pretension to a respectable standing? Simply because the law compels the charlatan to put off the disguise of an honest man, and don the scarlet livery and wig that belong to his character, in which attire he can deceive none but such as deserve it. He is, besides, forbidden to keep any but innocuous medicines amongst his wares. It is the force of law, and neither professional eminence nor popular enlightenment, that can scotch the snake of quackery, and awaken or inspire a respect for legitimate medicine. The tendency of the human mind, when left to itself, is towards imposture, and the freer the institutions of a country, the more rife and multifarious must error be. Compared with the Continent, England has long since won the unenviable title of "the Paradise of Quacks;" America, then, must surely be their seventh heaven.

Although struggling against this view of the subject, Dr. Manley looks around in vain for an explanation of the prevalence of medical delusions; he cannot solve the paradox that men should be so careless of life, their most precious possession; that men, even, who in health are capable of the grandest efforts of the understanding, should in sickness be "found crouching to the knave whose vocation is to make merchandize of their weakness." He finds no solution but that our passions and prejudices master the reason when enervated by sickness, and he proffers an apology for such as in this manner become the willing victims of impudent imposture. But he can discover no excuse for the perpetrators of these atrocities, whom he thus describes:

"There are multitudes of men calling themselves physicians in our midst; men claiming to be respectable, and whom the world does respect, whose support is procured, and whose wealth is accumulated, at the expense of the health and the comfort, nay, the lives of those who confide in their fraudulent professions; professions, too, not made under the influence of self-delusion, for in such cases our charity could in some measure qualify the severity of our judgment,

but made for the sole purpose of profiting by hopes based upon them, which they well know will be disappointed."

This picture is not over-drawn; its colours are even more subdued than they needed to be, and yet in what a fearful light does it represent the guilty men who dare to carry on their odious and fatal traffic in the name and under the assumed sanction of our noble and beneficent art. What redress or protection remains to us against these worse than open enemies, for they inflict their worst wounds by claiming alliance and community with true physicians?

"It would be labour lost to attempt to cure the evil by remonstrating with those who have a personal interest in perpetuating it; the facilities which medicine offers to practice imposture, and the bounties paid by an unconscious public for the deceit, are obstacles in the way of all argument which truth can present, because mistaken interest is enlisted on the side of fraud."

As there is certainly no prospect of converting rogues who find roguery so lucrative, Dr. Manley hopes to curtail their successes by enlightening their dupes. He says,

"We must commence by communicating to the public, who are the victims of the delusion, some knowledge of themselves; we must attack their prejudices by informing their minds, and teach them all that they should know; *the great principles on which the science of all rational medicine rests.* It would seem that the necessity of engrafting *human physiology* on our courses of general academic instruction, was not only important but imperative; as it would serve the double purpose of a protection against the assaults of quackery, and furnish that kind of intelligence which would enable the public to form a more accurate judgment of the character of their physicians.

"I am very sensible that this is considered by many of the profession, as a recommendation of doubtful expediency; but I confess that I am yet to learn that it differs in principle from the constantly iterated opinions given to the community on the subjects of hygiene or medical police, which all deem matters of professional duty."

We are not of those who consider it inexpedient to teach physiology in our academies and colleges, for, in itself considered, all knowledge is profitable; but we are most unequivocally of those who believe that to do so will increase instead of diminishing the patrons of quackery. Can we withdraw victims from charlatanism by teaching them physiology? As well might we expect to disabuse the gaping wonderer at the mysteries of thimble-rig, by explaining to him the anatomy of the hand, and demonstrating the action of its muscles by means of the parallelogram of forces. In what possible way can the study of physiology enable the public to form a more accurate judgment of the character of their physicians? Grant that the patient is as consummate a physiologist as Müller himself, but ignorant, of course, of pathology and therapeutics, how will physiology assist him in learning whether his medical attendant has detected the nature of his disease, or chosen the proper remedies for its cure? Hippocrates and Galen were, it may be presumed, successful and respected physicians, and would certainly not be less successful did they practice in our own day. Now, in what light would our academic student, perfect in his modern physiology, regard these ancient worthies, should they undertake to prescribe for him? As obsolete and ignorant dotards, no doubt. And yet nothing can be clearer than that the physiology of the patient would not be in the least a touchstone for trying the prescriptions of him of Cos or Pergamus, and that the merit or vice of their precepts would be equally independent of the patient's accomplishments in physiology. The truth is that Hippocrates and Galen are every day prescribing for our sick, and we never hear of Physiology making a serious objection to their doing so, without exciting a smile at its interference.

The common sense of mankind, no less than the medical records of all time, teaches that the curative powers of medicines are determined, not by physiological precepts, but by direct observation of their action; the medicines which are the surest in their effects are precisely those of whose *modus operandi* we know little or nothing; and such being the case, there is no apparent reason why the layman, let him be physiologist or not, should disbelieve the placards of nostrum venders, more than the assertions of medical treatises. Knowing that

in this matter experience is the only test of truth, he wrongly judges the experience in both instances to be of equal value, for he does not take into account the moral character of the witnesses. Still less does he consider that the experience of the quack is a totally different thing from the experience of the scientific physician; the one consisting wholly in the reiterated prescription of a medicine of which he knows little for diseases of which he knows still less, while the other is a constant growth in knowledge of the nature and distinctive characters of diseases, obtained by an assiduous analysis of their phenomena, and directed by the light of anatomy, physiology, and chemistry, as well as by that of sound medical learning. The study of physiology will help no one to an acquaintance with the reality or the importance of this distinction, and yet no wonder that without a knowledge of it men should rather believe the liar who promises everything, than the man of truth and science who will promise nothing without qualification.

But even supposing that physiology were capable of preventing the delusions, follies, and calamities, which afflict the public and grieve ourselves, the next question to be settled would be in what dose must this precious prophylactic be administered? As a branch of general education, little enough of it can be given, not a tithe, we presume, of what a medical student receives during his pupilage; and yet no one will pretend that our graduates have derived from the study of physiology wherewith to defend themselves against the heresies of the day. Why, even the infinitesimal gentry know that there is so little direct connection between physiology and the *methodus medendi*, that they teach it to their pupils, and out of the very same text-books which our colleges prescribe.

A smattering of physiology, as of anything else, must breed mischief. There was a notable instance of its tendency, not long since, in the case of a well-known "philosopher" of the other sex. This lady, who is remarkable for her acute and masculine intellect, was so charmed with the discovery that chemical changes in the ultimate molecules of the body would account for the circulation of the blood, that she at once degraded the human heart to the rank of an "auxiliary" among the forces which sustain life. In the same manner, but in an infinitely lower scale, the writers for daily journals pipe their thin treble of commendation or blame upon medical subjects, pronouncing judgment upon systems and modes of treatment with the perfect self-complacence of *cognoscenti*. A large portion of the clergy, here and there a lawyer, numbers of so-called literary persons, and people of every class, down to the toothless crone and just emancipated school-girl, range themselves under the banner of one 'pathy or another, which have nothing in common but their decided antipathy to medical science and common sense. And it is precisely amongst the "diffusion of knowledge" classes that such heresies recruit their ranks. Yet, let it not be supposed that medicine is alone in suffering by these presumptuous encroachments. The evil is one that pervades society, and like a poisonous gas lifts up the weaker minds against knowledge and authority. The layman confutes the theologian, the jury gives law to the bar and to the bench, the politician sneers at the circumspection and tardiness of the statesman, and the rank and file imagine that victories are won by them, and not by their leaders' skill. In this new edition of "high life below stairs" it would be strange if physicians were not caricatured, and their rights challenged. Viewing these things as amongst the follies of the time, let us not be anxious overmuch about the popular esteem; but taking care to set our own house in order, let us endeavour to deserve the approval of conscience, and the respect of posterity.

We cannot but think the position untenable that there is as good reason for teaching laymen physiology, as public hygiene or medical police. In the one case precepts for the preservation of the individual's and the public health are inculcated; we recommend certain things to be done or avoided, just as we prescribe rules for the food, clothing, exercise, &c., of our private patients, whether they be illiterate or enlightened. But in the other case, it is proposed to instruct a certain class of the non-medical public in the most extensive, the most difficult, and the most fluctuating of sciences. Between the two there is all the difference that exists between directing a course of diet and explaining the process of digestion.

Dr. Manley shows that the interference of nostrum mongers, and pretenders, to which he might have added domestic prescribers, converts many simple into complicated diseases, and puts off the appeal to medical art, until the curable stages are passed by. This he illustrates by pointing out the numerous and fatal maladies which may result from intermittent fever improperly treated in its acute period, and before any organic change arises. He is of opinion, that a knowledge of physiology would open the eyes of the public to these delusions and their dangers, but he does not point out how this knowledge would effect so desirable a result, and we must confess that we are at a loss to conceive in what manner it could operate. When it is stated that "the least knowledge of physiology must make it obvious" that no morbid condition of the human system can in strictness be called simple, it does really seem as if pathology and not physiology must have been meant; for the latter has no relation whatever to morbid conditions, except in so far as it is used to *explain* their phenomena and connections. That no disease is simple is true under all possible systems of physiology, because it is really independent of all, and stands on pathological evidence alone; no knowledge whatever of physiology could possibly suggest its truth, or do more than attempt to explain it.

This idea of the relation in which physiology stands to the science of medicine, we believe, and have endeavoured to show, is fallacious. For the same reasons we are compelled to dissent from the venerable orator when he says, "It is to this cause, (empirical practice from a want of early instruction in physiology,) we are chiefly to attribute the loss of confidence which marks the conduct of the intelligent portion of the community. . . The public . . . refuse to accord their confidence to persons who practice physic merely for its profit." This account of the matter is not, we think, satisfactory. As the public are wholly unable to judge whether the physician practices upon right principles or not, they are surely unable to decide how far a knowledge of physiology would improve medical practice. The efficacy of the prescription, and not the physiological explanation of its action, is what concerns the public. Who does not know that of the practitioners who are in the habit of explaining everything to their patients, disease, indication, remedy, and all, that the greater number do not rank among sound physiologists? Who does not know that if two skilful physicians are called to the same case, the chances are that they will agree respecting the treatment to be pursued, but probably be as opposite as the poles in their theories of the disease, and of its cure? If the public knew this, they would probably conclude, rushing from fallacy into absurdity, that physiology is of no use in medicine.

Let it not be inferred from the previous remarks, that the writer holds physiology in light esteem as a department of medical science. On the contrary, without its aid, medicine would be comparatively lame and impotent. But that aid it does not directly render to therapeutics, which is an art, but to *diagnosis*, which is a branch of pathological science. If the power of distinguishing diseases from one another, by ascertaining their nature, seat, and relations, constitutes a part of medical science—and it certainly does, the largest part—then physiology, without which such knowledge would be impossible, is a fundamental and an essential requisite in medical education. With its advance towards truth, diagnosis is perfected, and the research for therapeutical laws facilitated.

The decline of the profession in public esteem proceeds not from the neglect of physiology, as such, nor of that branch of science alone, but of it in common with pathology in its widest sense, of botany, of chemistry, of anatomy, and above all, of that medical learning which is the best foundation on which to build, the best light by which to gather the golden grains of modern science, the best anchor to prevent the mind being carried away by the cross currents and windy gusts of modern hypotheses. This cause, like the presumption spoken of above, is not confined in its influence to the medical profession; it blights all liberal pursuits, both here and in maturer Europe. A late writer on English University education says, "The most distinguishing feature of our time is the principle which forms the life and soul of the retail trade—the principle which sets men to busy themselves more about small and immediate re-

turns for outlay, than the advantage which is general, or distant, or future. People have asked, what is the market value of this or of that branch of learning? Will it get a boy on in the world? . . the cry of the largest class of the public is—give us such knowledge as will *pay*." The great majority of persons who intend to practice medicine, prefer the shortest, cheapest, and least troublesome education which public opinion tolerates for medical students. They reason naturally enough that a public which so eagerly patronizes every form of quackery, will not be quick to ask for their credentials, or enlightened enough to detect their ignorance. But it is clear that without medical colleges in which the student can obtain nothing but his diploma and the marrowless dry bones of science, the line between quackery and medicine would be more distinctly visible than at present, even to vulgar eyes. Yet so long as such nuisances exist, the profession will present a gradual transition from one end to the other of the scale, from the learned, enlightened, and skilful physician, down through successive grades of pretenders, and puffers of themselves. It will continue to include men who resort to indelicate means of introducing themselves into practice; men who pursue their profession, but have no faith in it; renegade physicians who have embraced the heresies of the day; those who practice "allopathy," "homœopathy," or "sudopathy," just as the patient prefers; and in the lowest deep of all, the vile traffickers in human life with their panaceas, their blood pills, and lying certificates from the great and little vulgar they have victimized. In this *facilis descensus averni*, no one can say where physicians end, and quacks begin; nor will it be possible to do so, until the medical profession, making for itself that law which is necessary for its self-preservation, shall shut the doors of the pest-houses which generate this swarming plague, and set upon them the seal of perpetual reprobation.

Hear what Dr. Manley says of a portion of our medical teachers: "The preliminary information of the pupil; the conduct of his medical education in some of our medical colleges; the measure of acquirement of the teachers themselves; their anxiety to profit by their situations to which accident, management, or the influence of political friends have promoted them, and the known fact that volubility of delivery, a fund of anecdote to amuse, rather than a store of scientific intelligence upon which to draw for the instruction of students, and a cultivated familiarity with them, which in effect defeats all proper discipline, and destroys all the deferential respect which should attach to the character of instructors; and above all, the indefinite multiplication of the schools, contribute infinitely more to make the practice of physic *a trade*, than all other causes combined. Lecturing, itself, has become a trade, confessedly such, practiced more for its profits than for any other purpose; and professors, like Thespian players, travel around the country, for the amusement, as well as the instruction of their hearers, till they may find a field of promise, where their peregrinations may terminate, and themselves become stationary teachers! If these things are so, can it be a matter of surprise if their pupils should 'better their instruction,' and become tradesmen too?

"It is a fact, and one too pregnant with disastrous consequences, to pass without the unqualified censure of the whole profession, that some of our medical schools, in their annual circulars, invite, nay, almost entreat the public for their patronage; the present inducements to the half-educated, and even the wholly uneducated youth of the country, to become physicians, promising facilities for study, and full courses of instruction on easy terms; and on their arrival, accept promises to pay at remote periods, instead of their fees; thus offering bounties to the ignorant and illiterate, to crowd the ranks of a profession whose duties and responsibilities require higher attainments, a more elevated moral, greater industry, and a more severe and constant application to study, than any other profession in the whole catalogue of human sciences."

"*The time was,*" says the speaker in another place, "*when the schools of medicine gave character to the profession, but that time has long since passed by; it is now its chief anxiety to prevent the schools from destroying IT.*" Fortunately, this anxiety has produced action, and the representatives of the medical profession in the United States have twice, in solemn convocation, pronounced against these abuses. If such a sentence remains inoperative, something more

must be attempted. "The time has arrived," says Dr. Manley, "when medical schools must become subjects of discipline." The only question is, what salutary discipline is it possible to apply? Dr. Manley thinks that the abuses will continue "so long as private speculation in teaching controls the issue of medical licenses," in other words, that the diploma should not confer a right to practice medicine. Under a different political constitution from ours, such a plan would undoubtedly be the best, but experience shows, that in this country medical science has always been treated by legislators as if it was the least important of human concerns; and we have, therefore, every reason to dread that our sacred ark should be touched by their unhallowed fingers. We have not yet reached that stage of national existence at which it is learned that perfect liberty is perfect obedience to just laws, and in no wise license to do what seems good to every one. Meanwhile, the law of self-preservation bestows the right, and our actual situation imposes the duty, of restraining within just bounds the power of traders in medical education, to disgrace the office of teacher, and destroy the respectability of the medical profession in the eyes of the world. If it were made disreputable to be connected with institutions such as Dr. Manley has described in the paragraphs quoted above, if the society of their professors were shunned, and it were shown that their participation in the affairs of the American Association, and other similar bodies, is tolerated only, and not desired; if the colleges which are endeavouring in good faith to improve medical education, were resolutely to refuse to recognize the students and graduates of the "trading schools;" and if, finally, *every physician should*, when the occasion required him to write his title, *add the name of the institution which conferred it;* —we are persuaded that in a few years the unworthy schools would either become extinct, or going altogether over to quackery, there would be a great and impassable gulf fixed between them and the medical profession, so that the public would at once know the marks by which a genuine physician may be distinguished from his counterfeit. A. S.

ART. XIV.—*The Plea of Humanity in behalf of Medical Education. The Annual Address delivered before the New York State Medical Society, and Members of the Legislature, at the Capitol, February 6th*, 1849. By ALEXANDER H. STEVENS, M. D., President of the Society, of the American Medical Association, &c. Albany, 1849: pp. 20.

THE dignified and almost solemn tone of this address is well suited to the momentous truths which it contains, and well becomes a man who is second to none in the useful labours of a long life, for his experience as a professor of medical science and art, and for the distinguished eminence which he has won for himself in the medical profession. No one could better claim the right of being heard by his brethren and the legislature of the Empire state, when the cause of medical education was to be vindicated; and his address shows that it would be difficult to make a better plea in favour of the essential beneficence and utility of the healing art.

The speaker first directs the attention of his audience to the names of Van Ness, Clinton and Kent, and after showing how these statesmen fostered medical education, declares the design of his discourse to be the vindication of their policy. A sketch of the physician's vocation follows, in which occurs this striking passage:

"The offspring of the highest and lowest, in the first moments of their existence, come under his care, alike naked and helpless. The screen which in after life conceals many of their weaknesses and some of their virtues, ever open more or less to the medical observer, is for him removed by sickness and misfortune. Before the man of healing the trappings of greatness are laid aside, and the cloak of deformity is dropped; beauty puts off her ornament, and without a blush modesty raises her veil. . . . Surely they who hold such relations to society should be learned, discreet and wise; trained by liberal studies and by illustrious examples, to be ever true to the cause of humanity; elevated by education, as

by education alone they can be elevated, to rise above all that is sensual and sordid."

Experience is the only source of sound medical learning, but "the experience of any single individual, in comparison with the knowledge to be derived from a study of the experience of others, is exceedingly small, and can never render a person competent to practice medicine. The experience of a long life would not equal the amount of useful knowledge that might be imparted by a competent instructor in a single year. The self-taught physicians are scarcely taught at all; and would be still more ignorant if they did not obtain information in casual intercourse with men of superior education and attainments." These sentences contain in miniature the whole argument for the necessity of a thorough medical education; we would that they were indelibly impressed upon the mind of every physician in the United States; for then no one could fail to take an earnest part in the improvement of medical education. How many of our medical graduates must be included in the class of self-taught physicians!

A prevalent error is thus happily exposed. "It is often assumed that the parties interested in the discussion which the subject provokes, are the medical profession on the one hand, and the empirics on the other; and that it is a conflict of interests between them in which the public have little concern. Such notions are not confined to the ignorant and vulgar, but are entertained by men of the learned professions, and even by legislators. Medical brothers you well know, fellow citizens you ought to know, better! The real parties are the public and the regular physicians on one side, and the charlatans and their abettors on the other."

Adverting to the vulgar notion that money is the primary object with physicians, Dr. Stevens cites the immense number of charitable institutions and private individuals whom they serve gratuitously, the straitened circumstances in which most physicians leave their families, and the readiness with which medical discoveries and inventions which might make the fortune of individuals, are thrown open to all the world. When some attempt was made to patent the invention of anæsthetic inhalation, "the indignation of the profession was roused from one end of the country to the other." But, "if the pecuniary rewards of physicians are so small compared with the expenses of their education and the severity of their labours, why are so many ready to enter the medical profession? I answer because the study of it is so delightful; and because the practice brings with it higher rewards than money can bestow. Who that feels that life is saved or prolonged by his skill, does not receive a reward? Who that has felt the warm tear of gratitude for rescuing from death a husband, a wife, or child, would wish to be other than a physician?"

After portraying on the one hand the life of the humane physician, whose only riches and legacy to his children are the gratitude of his patients, the honour of his profession, and his good name, and on the other the career of the quack, whose ill-gotten wealth cannot purchase exemption from contempt during life, and speedy oblivion after death, Dr. Stevens proceeds to show "what is doing and what has been done by medical men towards ameliorating the condition of society." His position is high but unassailable; and yet we venture to say that few even of our physicians have an equally just idea of the dignity and power and usefulness of their vocation. The medical man is shown by Dr. Stevens in his influence upon the physical and mental training of the families committed to his care; if he is a man of education, taste and knowledge, he does much to encourage, refine and improve his younger patients, and again and again he becomes the peacemaker and the moral guardian of the domestic hearth. In society his influence is not less real, although it may be less given to display itself openly, than that of the other liberal professions; and inasmuch as the physician is by his habits of thought and association less inclined to partisanship and fanaticism, his guidance in the affairs of men is all the more permanently felt. The physician is always found taking the lead in measures for improving the morals and the knowledge of the community; Dr. Stevens alludes especially to the part which he has taken in the "temperance reform," to his ministry in procuring the foundation of hospitals, and of asylums for the insane, of institutions for the deaf and dumb, for idiots, for the blind, &c., in all of

which relations the medical faculty of New York have been distinguished for their wise and humane policy, and for their untiring assiduity. Their labours in that department of natural science and art which has done so much for elucidating the theory, and increasing the profits of agriculture, and of the mechanic arts, are appropriately alluded to in this address.

By an enumeration of statistical results, Dr. Stevens illustrates "the prodigious extent to which human life has been lengthened with the advance and diffusion of medical science," and lest the skeptical should doubt the reality of the operation of the cause here assigned, examples are given of large charitable institutions in which the diminished rate of morality bore a strict proportion to the improvement in their medical management. "Until within the last two years, the New York Almshouse, with its hospital, has been under political management. The mortality during a period of twenty years was more than twenty per cent. per annum. Two years since a new organization was made, and the whole establishment was placed under the control of one resident physician, and an efficient corps of unpaid physicians and surgeons. During these two years the mortality has been reduced to about twelve per cent. per annum." In the Nursery Hospital on Blackwell's Island the mortality was twenty-three and one-fourth per cent. in 1847, but in 1848, under a different organization, it was reduced nearly one-half.

The results of those hygienic measures, which physicians alone are competent to recommend, illustrate the value of medical science much better than the results of the treatment of disease and injuries, because they are furnished by a vastly larger number of individual cases. Dr. Stevens goes into a calculation based upon the admitted average value to the State of every sound adult life, to prove that a diminution of the annual mortality of the State of New York, would be productive of a saving to the commonwealth, amply sufficient to supply every part of the State with learned and skilful physicians, and to support agricultural professors. Fortified by this demonstration, he contends that "it is the duty of a wise government to take care of the lives of the citizens. They who labour for the wealth of the State have a right to expect that a well-educated physician should be within their reach, when they or their families are disabled by injury or disease." In urging upon the legislature to recognize this right by means of legal enactments, he employs this cogent argument. "The public must always employ medical men; and it rests with the legislature to decide upon the degree of knowledge and skill which they think it right to give to men entrusted with the care of the health and lives of the people. In supporting your common schools, it is not the teachers for whom you legislate; and in supporting medical schools, it is not the medical professors, and still less the medical profession, on whom your bounty is bestowed."

The necessity of the government assuming the conduct of medical education, and of prohibiting unqualified persons from practicing medicine, arises, in the opinion of Dr. Stevens, from certain peculiarities of our countrymen. "The defect of the American character, as regards scientific acquirements, is overweening self-confidence, or an undervaluing of the necessity of technical knowledge, for the successful pursuit of the learned professions, and consequently a lamentable deficiency or superficiality in their acquirements. This characteristic has tended to deteriorate the general standard of education." Whatever difference of sentiment may exist as to the *policy* of invoking a governmental interference that must, we fear, soon become partisan and political under our democratic system, all candid men must agree that the statement just quoted is the literal but mournful truth. We rejoice that one so high placed and influential as Dr. Stevens has not shrunk from speaking it boldly and plainly. It is because this statement is true that so many colleges "send forth young men with their degrees, very imperfectly qualified to discharge their high and responsible duties." It is because this is true that "a school is attractive to students which gives degrees upon easy terms; whose examinations are not too rigid; and that it is therefore quite possible for a school to be flourishing while the general education of its students is deteriorating."

The remedies proposed by Dr. Stevens for the evils which he has depicted are "to bring a *good medical education* within the reach of a larger number of stu-

dents: to open the doors of the medical schools without charge to all that have received the necessary preliminary education, to insist upon a longer period of study, and to make the examinations more strict." The spirit of these recommendations must be approved by every lover of sound medical learning; and all would rejoice to witness its legal application in that great State which has been the first successfully to engage the medical profession of the United States in the cause of educational improvement. A. S.

ART. XV.—*Manual of Physiology.* By WILLIAM SENHOUSE KIRKES, M.D., assisted by JAMES PAGET, Lecturer on General Anatomy and Physiology at St. Bartholomew's Hospital. With one hundred and eighteen illustrations on wood. Philadelphia, Lea & Blanchard, 1849. 12mo. pp. 552.

THIS is, certainly, a most able manual of physiology. The student will find in it, not a meagre outline, a bare skeleton of the leading particulars embraced in the science, but a very complete and accurate—though, at the same time, concise—account of the facts and generally admitted principles of physiology; forming an admirable introduction to the study of that science, as well as a useful compendium for consultation by those who are preparing for an examination.

The work was originally commenced with the intention of making it simply a digest of Müller's elements—and several of the chapters are of this character. In other portions of the work, the original design has not been followed out. In regard to the subjects embraced in these, "it was found that the progress of physiology, during seven years, had so increased or modified the facts, and some even of the principles of the science, that Müller's Elements, and the notes by Dr. Baly, could only be employed as among the best authorities and examples."

While all discussions of unsettled questions and expressions of personal opinion are necessarily omitted, ample references are given, not only to works in which these may be consulted, but to those, also, by the aid of which the study of physiology, in its widest extent, may be pursued.

The English edition bears the title of "Hand Book." This the American publisher has altered to "Manual"—"as being more appropriate to the character of the work." In what this greater appropriateness consists, we are at a loss to imagine: we had always supposed that the Saxon hand-buch and the Latin *Manuale*, both meant one and the same thing.

The illustrations which are from steel plates in the original edition, are in the present from wood engravings, and being placed upon the same page with the text, are much more convenient for reference. Occasionally a different representation of the same object has been substituted, where such alteration appeared advantageous.

The whole of the illustrations are very excellent, and calculated to render the description of the objects they represent clear and precise.

To those who stand in need of a Manual of Physiology—and works of this description have now become, in a certain sense, indispensable portions of the apparatus of study—we can very confidently recommend the present one as well for its comprehensiveness as for its general accuracy. D. F. C.

ART. XVI.—*An Introduction to Practical Chemistry, including Analysis.* By JOHN E. BOWMAN. Philadelphia: Lea and Blanchard, 1849. 12mo. pp. 303.

THE above is the title of a republication, the special object of which is to explain, and render familiar to the beginner, the various processes employed in analysis, and for the illustration of chemical science. Although intended as a text-book for the author's class, it deserves a wider circulation, from the clear and concise mode of explanation of the processes, and the simplicity of the manipulations, placing the acquisition of the science by actual practice within

reach of all whose inclinations may tend in this direction. In the introduction, is inculcated the indispensable necessity of method and care in manipulation, and, an account of the symbols used to express composition. In regard to symbols, a novelty is introduced by which the reader is informed by the kind of letters employed, what is the state of aggregation of the substance expressed. Thus hydrogen, a gas, is represented by a thin type (H), bromine, a liquid, by the italic (*Br.*), carbon, a solid, by the Roman letter (C); the same construction being also applied to compounds, and the condition in which they may be used, or the forms assumed as the result of decomposition. The work is divided into five parts; the first containing the operations and exercises necessary in the production of gases and liquids, glass working, blowpipe operations, specific gravity, &c.; the second, the action of reagents, the substances being arranged in classes, according to their modes of reaction; the third, the qualitative analysis of substances of unknown composition, whether simple or mixed salts, soluble in water, acids, or insoluble in ether; the fourth, quantitative analysis; and the fifth, examination of calculi, and notices of reagents, together with their impurities and modes of detection, concluded by an appendix containing a series of tables of value as references, and important in the economy of time.

R. B.

ART. XVII.—*Chemical and Pharmaceutical Manipulations.* By CAMPBELL MORFIT, assisted by ALEXANDER MUCKLE. Philadelphia: Lindsay and Blakiston, 1849. 12mo. pp. 482.

THIS work is intended to facilitate the practical acquisition of chemical knowledge, and to lighten the labours of the operator, by a complete description of the most approved apparatus and processes, and by instructions in manipulation, together with the precautions in the management necessary to insure accuracy. This object has been accomplished in a manner creditable to the authors, as expert and careful analysts, and exhibits throughout a familiarity with the minutiæ of detail, and the necessity in all cases, of acquiring the habits of strict attention to care and order in these, as can only be acquired by constant operation in the laboratory itself. The work affords all the information requisite for fitting up a laboratory adapted for examination, experiment, and investigation, and in which the most modern improvements may be found. Commencing with the laboratory itself, there are full descriptions of the separate apartments necessary, the apparatus and uses to which each are destined, the best modes of lighting, and the arrangement of their furniture most suitable to prevent delay and inconvenience to the operator. This is the first, and certainly a very important subject, upon which depends the future comfort, not to say success, of the occupant, and by the adoption of correct ideas on this point, such as are here laid down, the arrangement may be modified to suit the necessities or convenience of all. The notices and descriptions of apparatus are extensive, comprising the indispensable, and occasionally useful, the most familiar, and the more rare, the economical and costly, which, together with the mode of manipulating, are copiously illustrated by drawings, by which they are rendered perfectly intelligible, even to an unpracticed beginner. The information on these points is of such extent, that disappointment would rarely meet one who should consult the work in relation to anything connected with these subjects, and the knowledge obtained be applied practically, as far as this can be effected, without the actual performance of the operations themselves.

R. B.

ART. XVIII.—*Report of the Standing Sanatory Committee of the Board of Health of the City of New York, on the subject of Asiatic Cholera, at present prevailing at the Quarantine establishment of New York at Staten Island.* New York, 1848: pp. 24.

THIS is a highly interesting and valuable document, furnishing another to the many remarkable instances already recorded, of an outbreak of cholera under most unexpected circumstances, and the conveyance of the disease to a distinct locality.

Dr. Whiting, in his interesting letter, which forms the principal portion of this report, gives the following account of the outbreak of cholera on board the packet ship New York, as obtained from her first officer Captain Lines, with the history of the disease, after the arrival of the ship at quarantine, as observed by himself.

On the second of December, the packet ship New York arrived at quarantine with a number of persons sick, having lost seven during the last week of her voyage, with a disease that has since proved to be Asiatic cholera. The New York left Havre on the ninth of November, with three hundred and thirty-one steerage passengers, twenty-one cabin, and thirty-three crew; a total of three hundred and eighty-five. All continued well until the twenty-fifth, Saturday, when one of the steerage passengers, a German, aged twenty-nine, in robust health, was attacked with vomiting and purging, accompanied by cramps of the muscles of the upper and lower extremities. The Captain supposed it to be cholera morbus, and prescribed judiciously for the symptoms, but they continued until the third day, when death occurred.

The next case was on the 26th, Sunday, when an old man aged sixty-two, in feeble health, was attacked with vomiting and purging, with coldness of the whole body, and violent cramps and spasms. He died on the second day after the attack. Monday and Tuesday, 27th and 28th, two cases occurred. A girl, aged five years, died in two hours, and a boy also, aged five, died in four and a half hours after their first attack, both perfectly well previously. Wednesday, 28th, a man, aged forty, was attacked at 8 o'clock A. M., and died at 3 P. M. of the same day. On Thursday two children sickened and died, after six and eight hours illness.

The ship came to anchor at quarantine on Friday night, and from that time until Sunday noon, when the passengers were landed, twelve new cases occurred.

The best means of arresting the spread of the disease appeared to Dr. W. to be to remove them from the confinement of the ship, and to separate the sick from the well. A steamboat was engaged to bring them to the public store docks. The sick were sent to an excellent hospital room, and good nursing and medical attendance immediately provided.

A remarkable feature in the history of this disease, is the fact that six persons have been affected in a similar way, who had been but for two days exposed to contact or proximity to these people.

Nothing like cholera existed at Staten Island at the time of the arrival of the ship New York. When her passengers were removed to the public stores, they were occupied by about seventy persons, who had just recovered from other diseases. One of these, a man just recovering from a fractured patella, assisted in the removal of the patients. This was on Sunday; on the Wednesday following, he was attacked with violent symptoms of cholera, and died the same day. A woman who had been a nurse, without having any communication with these people, but occupying another room in the same building, was attacked, and died the same day, with all the symptoms of cholera. A man who had been discharged and gone to the city of New York on Monday, and had remained a *little over a day* in this same enclosure, was returned from the city as a case of cholera, and died also on Wednesday. On perceiving this communication of the disease to the convalescents, Dr. W. immediately sent them away and distributed them through the other hospitals, since which three others have been attacked,

two of whom have died, but none other than those at first exposed at the public stores, have been affected. These had all been inmates of the hospital for weeks, were ready to be discharged, and had but a limited exposure for forty-eight hours to the influences of the disease. Two convalescents from typhous fever were subsequently attacked.

What is extremely curious also is that:—

All the persons who have been attacked, from the first case on board ship to the last, excepting the inmates of the hospital, have been from among two hundred and seventy Germans,* who have been living in Havre and its environs, where there has not been a single case of cholera. These persons were originally from Germany, mechanics, and flourishing, until, by the triumph of liberty and equality, the native French artisans have succeeded in inducing the public to withdraw their patronage, and the municipal authorities to proscribe them.

No circumstances can be ascertained to explain the circumstance of these Germans being the exclusive victims. They were all healthy and robust, had not been exposed to cholera at home; they enjoyed with the other passengers the best accommodations, and their provisions were abundant and of the best quality.

The whole number of cases, including twelve taken from the ship, was on the 19th December, 63, of which 29 had died.

The disease has since entirely disappeared from quarantine, and without extending to the city of New York, or to its neighbourhood.

Art. XIX.—*Report of a Joint Special Committee of Select and Common Councils, (appointed on the 7th December, 1848,) to whom was referred certain queries contained in a Circular Letter from the American Medical Association, on the subject of Public Hygiène.* Published by order of Councils. Philadelphia, 1849: pp. 39, 8vo.

This interesting report, for a copy of which we are indebted to the politeness of the chairman of the committee, C. A. Poulson, Esq., contains a mass of valuable information relative to the actual state of the city of Philadelphia proper; its means and resources for preserving health; its cleanliness, ventilation, and other matters having a bearing on its hygienic condition. It is our purpose at present merely to invite attention to this report; hereafter we shall have occasion to refer to it, more particularly in a review on the hygiène of American cities, in preparation for a future number of this Journal.

Art. XX.—*Summary of the Transactions of the College of Physicians of Philadelphia.* From Sept. 16, 1848, to Jan. 2, 1849, inclusive. 8vo., pp. 28.

The present number fully maintains the character of this valuable publication. It contains the annual reports on the Theory and Practice of Medicine by Dr. B. Coates, and on Midwifery by Dr. Griscom; an obituary notice of the late Dr. Henry Neill, by Dr. J. M. Paul; and reports of highly interesting conversations on the prevailing diseases of last autumn and the influence of the weather in their production; on the prevailing variolous epidemic; on the protective power of vaccination; on hydrophobia; with abstracts of several interesting cases communicated to the College. We shall endeavour to find room in our Domestic Summary for notices of some of the articles.

* Except one, a Frenchman from Paris.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Blood Corpuscles of the Human Embryo.*—Mr. PAGET has examined the blood of a fœtus of four weeks old, which is the earliest period at which it has been submitted to microscopic inquiry. The great majority of the red corpuscles presented a circular outline, and as they rolled over appeared spheroidal and vesicular. Their surfaces were smooth, and as they dried, portions of their edges were incurved and folded towards their centres. They were apparently more deep-coloured than in adult blood. The nuclei were circular, with well-defined dark outlines, and darkly nebulous, as if granulated. All the corpuscles were nucleated; some contained two nuclei, and were ovoidal, and larger than the rest.

The measurements of the spheroidal corpuscles were from 1–2100 to 1–2800th of an inch in diameter; that of the nuclei from 1–3700 to 1–4500th. Of the bi-nucleated cells the measurements were 1–1500 by 1–2300th of an inch.—*London Medical Gazette*, Feb. 1849.

2. *On the Changes which take place in the Lungs after Division of the Pneumogastric Nerves.* By Dr. SCHIFF.—It is well known that, after section of the vagus nerves in the neck of an animal, death frequently takes place at an interval of a few days. In these cases the lungs are found to have undergone alterations, characterized by congestion, and the effusion of a large quantity of frothy sanguinolent serum into the bronchi; which lesions have been ascribed by authors to the paralysis of the glottis consequent on the section of its nerve (the recurrent), which induces respiratory obstruction, either directly, or by permitting of the passage of food and other matters into the trachea. Dr. Schiff has performed a variety of experiments which disprove these ideas. By cutting in some animals the recurrents, and in others the pulmonary branches of the vagus, he has convinced himself that the section of the latter causes congestion, with tumefaction of the bronchial mucous membrane; while that of the former only produces narrowing and paralysis of the glottis, without any pulmonary changes. The lesions of the lungs are, likewise, unaffected by the performance of tracheotomy, and by the section of the œsophagus in the neck (in dogs). He, therefore, concludes, that the state of the lungs is dependent on the integrity of the pulmonary portion only of the nerve. Section of the nerve on one side produced a slighter amount of pulmonary lesion, but never confined to the lung of one side; a circumstance which M. Schiff accounts for by considering the anastomoses in the pulmonary plexus of nerves.—*Archiv für Physiologische Heilkunde*, 1847; *Gazette Médicale*, 2d Dec. 1848.

[Dr. J. Reid considers the congestion and bronchial effusion as a secondary effect of the diminished frequency of respiration in animals in which the vagi

are divided.—(*Ed. Med. and Surg. Journal*, April 1839.) This idea agrees perfectly with the results of the above experiments; and is, we doubt not, quite correct.]—*Monthly Retrospect*, Jan. 1849.

3. *On the Mechanism by which the Valves of the Heart are closed, and by which the Sounds of the Heart are produced.* By Dr. Joseph Hamernik of Prague.—In this paper, the author recapitulates at some length the opinions of Dr. Baumgarten on the mechanism by which the valves are closed, which he considers of much importance, and with which he professes his concurrence.

The most important points in Dr. Baumgarten's views, are, that during the systole of the auricles, there is either no regurgitation, or of a very trifling amount, from the auricles into the great venous trunks. This, he conceives, is prevented by a circular arrangement of muscular fibres, observed by anatomists to surround the orifices of the veins; by the blood being impelled in the direction of the auriculo-ventricular orifice, in consequence of the greater portion of the muscular fibres of the auricle being inserted into the tendinous border of these openings; and by the *vis à tergo* of the blood; and in the right side, by the valve at the mouth of the vena cava. This latter, however, Dr. Hamernik considers to be inoperative in the adult, and only useful in the fœtus. He attaches great importance to the force of the current of blood flowing in the venous trunks, due to the alternate pressure exercised by the respiratory movements, reflux being prevented during expiration by the valves in the veins at the base of the neck; and in the vena cava inferior, he attributes a valvular action to the displacement of the liver during expiration, which diminishes the calibre of the vein at its passage through the diaphragm. Dr. Baumgarten considers the pulsatory movements observed in the healthy state of parts in the great veins, to depend on the sudden interruption of the current of blood during the auricular systole.

That the auriculo-ventricular valves are closed by the counter pressure of the ventricular blood, suddenly developed by the contraction of the *auricles*. That the cavities of the auricles and ventricles, during the heart's diastole, are distended by the continuous current from the veins; while at this period the valves are to be found floating in the blood in the form of a funnel. That the object of the auricular systole is to induce such an amount of tension in the contents of the ventricles, and of course in the blood surrounding the funnel-shaped arrangement of the valves, as to cause their rapid closure; and that in this way only can regurgitation be prevented. If the heart be removed from the body, and the auricles cut away (it is better, however, to operate with one only), the artery obstructed by ligature, or by filling it with wax, and the cavity of the ventricle filled with a saline solution, the valve is found lying in the position above described. If then a stream of water be directed upon the valve from the height of a foot, so as to imitate the sudden contraction of the auricle, the valve is seen to close with great rapidity. If, however, an attempt be made to imitate the ventricular systole, by squeezing the ventricle with the hand, a large portion of its contents regurgitates before closure is effected.

That the closure is not due to the operation of the musculi papillares, but that it is much facilitated by the small specific gravity of the valves, which enables them to float on the surface of the blood.

Dr. Hamernik then proceeds to make some remarks, which he considers in part deducible from the preceding.

1. It is possible that there may occur one or more systoles of the ventricles, unpreceded by any auricular action, forming what is called the "rhythmus intercurrens" of the heart's action. In chronic asthma and pneumonia, the blood, powerfully propelled by the expiratory movements, may distend the auricles to such an extent, that they are unable to contract on their contents. In which circumstances, two or more systoles of the ventricles are required before the auricles can unload themselves.

2. The division by the older anatomists of the ventricles into portio auricularis, and portio arteriosa, is physiologically and pathologically significant. In the former, there is a current of blood until the closing of the auriculo-ventricular valves, continuous with that of the veins. In the latter, a current is esta-

blished by the ventricular systole, continuous with that of the arteries. Where there is no motion of fluid, there can be no murmur; consequently, simple roughness of the mitral valve by exudation, or otherwise, will not give rise to a murmur with the first sound unless the valve be also insufficient.

3. The mechanism by which the valves of the arteries are closed, is similar to that of the auriculo-ventricular valves. Immediately on the contraction of the ventricles, the pressure of the blood attained in the large arterial trunks, acting equally in all directions, effects the closure of the semilunar valves. Their complete closure occurs cotemporaneously with the end of the ventricular systole. When the ventricular diastole begins, the arterial retraction commences, and the wave of reflux from the large arteries falls upon the valves already closed, and thus is produced the clear second sound. There is no regurgitation, which would necessarily be the case to a certain extent were the valves shut only by the returning wave of blood.

4. The first sound of the heart is occasioned by the vibration of the tense auriculo-ventricular valves, acted on by the blood propelled against them during the systole of the ventricles, and the vibration of the chordæ tendineæ. In like manner, the second sound is produced by the impulse of the blood on the semilunar valves already shut, and not by their closure.

5. A double or even a treble sound is sometimes heard over the ventricles, which has been ascribed to various causes, but is probably due to a double vibration of the tense auriculo-ventricular valves—just as a sail struck by the wind may emit several sounds. The same explanation is given when the phenomenon occurs with the second sound.

In contraction of the mitral orifice, there is occasionally heard a peculiar sound termed *cliquetis métallique*, or "audible heart impulse," and of which different explanations have been offered. According to the author's experience, all true heart sounds are heard by mediate or immediate auscultation only. This sound, however, is heard at a distance from the chest, and is hence presumed by him to depend on the motion imparted by the heart's systole to the surrounding elastic tissues.

6. Morbid conditions of the muscular structure of the heart can have no effect in preventing closure of the valves.

7. As the small specific gravity of the valves is assumed to facilitate their closure, anything which can render them specifically heavier, as fibrinous deposits, in the case of debilitated individuals whose blood is of low specific gravity, may be conjectured to interfere with their action. It is in such cases that the re-establishment of an improved condition of the blood removes the murmur, as in typhus fever, severe pneumonia, &c. On similar principles, the author adds, the bruits observed in chlorotic patients, may perhaps be explained.—*Prager Viertel-jahrschrift*, 1847, vol. xi.

[We witnessed the experiments referred to in this paper, when performed by Dr. Hamernik, and have much pleasure in testifying to their accuracy. The experiment, by which it is shown that the auriculo-ventricular valve is closed before, and independently of the ventricular systole, is very easy of performance.

The valves, when cut out of the heart, are found to float readily on the surface of the blood; and probably their specific lightness plays a part in the mechanism of their closure, at least in the human subject; at the same time, that it is far from being essential is indicated in prone animals, and in the case of a man standing on his head. The seat of chlorotic murmurs prevents our attributing them to the cause hinted at by the author.]—*Monthly Retrospect*, Jan. 1849.

ORGANIC CHEMISTRY.

4. *Nature of the Gastric Juice.*—There is even, at the present time, a difference of opinion among chemists, with respect to the nature of the acidifying principle of the gastric juice. Some imagine that the acidity of this liquid is

due to lactic acid, others to hydrochloric acid, and a third party attributes it to the presence of the superphosphates. M. Schmidt, without making any direct experiments upon the subject, is inclined to think that the acidity is occasioned by a complex acid, which, under the influence of heat, is decomposed into hydrochloric acid and pepsine. Liebig, in common with some other chemists, denies the existence of free hydrochloric acid in the stomach; and he believes that, when it is obtained by the simple distillation of the gastric juice, it is formed by the reaction of the lactic and phosphoric acids, which are present in it, on the chlorides; and that they thus give rise to the production of free hydrochloric acid. LEHMANN has recently made a new examination of this subject; and he finds that, when he operates upon the stomachs of dogs, which are placed in a vacuum, in such a manner as to cause the vapours from the gastric juice to traverse a tube containing a solution of nitrate of silver, there is not any indication of free hydrochloric acid, until the concentration of the liquid has been carried so far as to permit the action of the lactic acid on the earthy chlorides. His observations, therefore, confirm the remark of Liebig, as well as the results of Bernard and Barreswill, as to the nature of the acid in the gastric juice.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1849, from *Archiv der Pharm.*

5. *On the Changes which Organic Substances suffer on their passage into the Urine.*—Messrs. WÖHLER and FRERICHS have caused a series of substances, of known composition, whose transformations, under the action of reagents, are also well defined, to pass through the organs of different animals (dogs, rabbits, guinea-pigs, &c.), under favourable circumstances for collecting the excrement and observing the action of the different substances.

Salicylous acid, given with the food in doses of ½ to 4 grammes, was detected unchanged in the urine, not having been converted into hippuric acid, as might have been expected from its isomerism with benzoic acid.

Oil of bitter almonds, free from hydrocyanic acid, was not found to exert a poisonous action, as has been stated by other experimenters. The urine, after its administration, contained hippuric acid. It is therefore converted, by the addition of 2 atoms of oxygen, into benzoic acid, which is subsequently converted into hippuric acid.

Amygdalin is not poisonous; there is, therefore, no substance in the body which can perform the function of emulsion. In two cases only, when given in large doses, it produced drowsiness, from which the animals, however, soon recovered. The breath then gave off an odour of hydrocyanic acid. In other cases these symptoms were not observed, while the urine in all cases smelt strongly of the acid, when mixed with milk of almonds. A portion, therefore, of the amygdalin may have passed off by the kidneys.

Benzoic ether was traced as hippuric acid in the urine.

Peruvian balsam also afforded hippuric acid from the cinnamic acid which it contains, and another substance, which caused the urine to assume a blood-red colour with hydrochloric acid.

Tannic acid was converted into gallic acid, pyrogallic acid, and substances bearing a resemblance to humin.

Urates and alantoin. The normal quantity of urea was increased 5-fold in the urine of a rabbit by a dose of 2½ grammes of urate of potash.

Oxalate of lime was found in considerable quantity, with an increased amount of urea in the urine both of man and the dog, after having taken urate of potash.

Allantoin, the other product of the decomposition of uric acid by peroxide of lead, was unsuccessfully sought in the urine.

Allantoin, given in considerable quantity, could not be detected in the urine, nor oxalate of ammonia, the product of its decomposition by boiling potash.

Sulphocyanide of potassium did not exhibit a poisonous action, as has been previously stated by other observers, but it appeared to diminish the activity of the spinal marrow. The sulphocyanide was always detected unchanged in the urine.

Rhodallin, or the combination of oil of mustard with ammonia, was found as

sulphocyanide of ammonium in the urine. Oil of mustard is consequently decomposed in the body, in a similar manner as by soda-lime. What becomes of the allyle could not be ascertained.

Chinon was found to exert no poisonous action; but its decomposition could not be traced, nor was it found in the urine.

Aniline is not poisonous, nor was it present in the urine of the animals to which it was administered.

Carbolic acid, or hydrate of phenyle, acted as an energetic poison. It appears probable that this substance is one of the active principles in castoreum, and the study of its physiological action might possibly lead to the discovery of some substitute for that very expensive drug.

Alloxantin. This substance passed through the kidneys in considerable quantity; it did not appear to undergo any change into alloxan, but a more than normal quantity of urea was detected in the urine after its administration.

Urea was not converted into carbonate of ammonia, as was anticipated. The urine continued acid, and the urea probably passed off as such.

The authors find that arsenic acid is less poisonous than arsenious acid, and appears to undergo reduction to the state of arsenious acid in the gut. Arseniate of lime, lately discovered in many mineral waters, is also poisonous in large doses.

Pure phosphoric acid exerted no poisonous action whatever, whereas phosphorous acid caused death in every case that it was administered.—*Quarterly Journ. of Chemical Society*, Jan. 1849, from *Ann. der Chem. und Pharm.*, lxv.

6. *On the Chemical Changes of Respiration.* By MM. Regnault and Reiset.—A new and very extended series of experiments on the subject have been instituted by MM. Regnault and Reiset, who give minute details of the several steps of the process employed by them, the precautions taken, and the kind of apparatus used. Their investigations, which are still in progress, seem to be performed with much care and exactness, and their results may probably be fully relied on. The most important of these results is, that nitrogen is invariably exhaled through the lungs, though the quantity is small, rarely exceeding $\frac{1}{100}$th of the amount of oxygen consumed. Hydrogen, and certain carburetted gases, usually present themselves in small quantity. As an illustration of the changes which Regnault and Reiset found to occur in the respired air, the following results of an experiment, in which a young dog was confined in the apparatus for 24½ hours, may be quoted:—

	Grammes.*
Oxygen consumed	182.288
Carbonic acid produced	185.961
Oxygen contained in the carbonic acid	135.244
Nitrogen disengaged	0.1820

If the quantity of oxygen consumed be represented at 100, then the results may be thus stated:—

Oxygen consumed	100
Oxygen in the carbonic acid	74.191
Oxygen otherwise disposed of	25.809
Nitrogen disengaged	0.0549
Average quantity of oxygen consumed in an hour	7.44

Lond. Med. Gaz., Oct. 1848, from *Comptes Rendus*, 1848.

7. *Source of Sugar in the Animal Economy.*—Dr. Bernard, from an ingenious series of experiments, an account of which we are compelled, by want of space, to defer until our next number, has come to the conclusion—that diabetic sugar is a normal ingredient in the blood and liver of animals;—that the formation of sugar takes place in the liver, independently of saccharine or feculent food; and that this formation of sugar commences before birth.—*Archives Générales de Méd.*

* A gramme equals about 15½ grains English.

MATERIA MEDICA AND PHARMACY.

8. *On Cod-Liver Oil.* By JONATHAN PEREIRA, M. D., F. R. S.—The oils obtained from the livers of the different species composing the tribe *Gadidæ*, appear to be very similar in their physical and chemical qualities, and there is good reason for believing that they agree in their medicinal properties. To all of them the term *oleum jecoris aselli*, *oleum jecoris gadi*, or cod-liver oil, is indiscriminately applied, though it is commonly used, especially in this country, to indicate the oil procured from the liver of the common cod (*Gadus morrhua*, Cuv.). It would be better, therefore, to employ the term *oleum jecoris morrhuæ*, or simply *oleum morrhuæ*, when it is intended exclusively to designate the latter oil.

De Jongh, in his *Disquisitio comparativa chemico-medica de tribus olei jecoris aselli speciebus*, published at Leyden in 1843, states that the Bergen (Norwegian) oil is principally obtained from three species—viz., the dorse (*Gadus callarias*), the coal-fish (*Gadus carbonarius*), and the pollack (*Gadus pollachius*), but chiefly from the first.

In general, continental writers distinguish three varieties of cod-liver oil, one white or pale yellow; a second brownish-yellow; a third dark-brown. But between the finest pale yellow or almost colourless oil, and the dark brown cod-oil used by curriers, there is an almost infinite variety of shades, so that no absolute difference can be founded on colour only.

De Jongh made, in Mulder's laboratory, a very elaborate analysis of three kinds of cod-liver oil, the properties of which he thus describes.

Three kinds of cod-liver oil are admitted and described by the writer just quoted. These are *pale*, *pale brown*, and *brown*.

1. *Pale cod-liver oil.*—Golden yellow; odour not disagreeable; not bitter, but leaving in the throat a somewhat acrid, fishy taste; reacts feebly as an acid; sp. gr. 0.923 at 63 deg. 5 Fahr. Cold alcohol dissolves from 2.5 to 2.7 per cent. of the oil; hot alcohol from 3.5 to 4.5 per cent.; in ether it is soluble in all proportions.

2. *Pale brown cod-liver oil.*—Colour that of Malaga wine; odour not disagreeable; bitterish, leaving a slightly acrid fishy taste in the throat; reacts feebly as an acid; sp. gr. 0.924 at 63 deg. 5 Fahr. Cold alcohol dissolves from 2.8 to 3.2 per cent. of oil; hot alcohol from 6.5 to 6.8 per cent. Ether dissolves it in all proportions.

3. *Dark brown cod-liver oil.*—Dark brown, is transmitted light greenish, in thin layers transparent; odour disagreeable, empyremautic; taste bitter and empyreumatic, leaving behind in the fauces an acrid sensation; reacts feebly as an acid; sp. gr. 0.929 at 63 deg. 5 Fahr. Cold alcohol dissolves from 5.9 to 6.5 per cent. of it; hot alcohol from 6.5 to 6.9 per cent. In ether it is soluble in all proportions.

De Jongh found the principal constituents of these oils to be *oleate* and *margarate of glycerine*, possessing the usual properties. But they also contained *butyric* and *acetic acids*, *the principal constituents of the bile* (bilifellinic acid, bilifulvin, and cholic acid), *some peculiar principles* (among which was the substance called *gaduin*), and not quite one per cent. of *salts*, containing iodine, chlorine, and traces of bromine. Moreover, he found that the oils always contained free *phosphorus*.

The following table shows the proportions of the constituents in the pale oil:—

Constituents.	Pale oil.
Oleic acid (with *Gaduin* and two other substances) . . .	74.03300
Margaric acid	11.75700
Glycerine	10.17700
Butyric acid	0.07436
Acetic acid	0.04300
Fellinic and cholic acids, with a small quantity of margarine, oleine, and bilifulvin	0.04300

Bilifulvin, bilifellinic acid, and two peculiar substances	0.26800
A peculiar substance, soluble in alcohol	0.00600
A peculiar substance, insoluble in water, alcohol and ether	0.00100
Iodine	0.03740
Chlorine, and traces of bromine	0.14880
Phosphoric acid	0.09135
Sulphuric acid	0.07100
Phosphorus	0.02125
Lime	0.15150
Magnesia	0.00880
Soda	0.05540
Iron	—
Loss	3.00943
Cod-liver oil	100.00000

There is some slight differences in the composition of the three kinds of oil. Whether these are constant or accidental, further investigations are required to determine. But from De Jongh's analyses, it would appear that the *pale* oil is richest in oleic acid and glycerine—that the *brown* oil contains the largest amount of margaric, butyric, and acetic acids, and of the substances peculiar to cod-liver oil—and, lastly, that the *pale brown* oil is richest in iodine and saline matters.

I now proceed to notice in detail some of the substances which enter into the composition of this oil.

1. *Gaduin.*—This is a brown substance which is soluble in alcohol, but is rendered insoluble by evaporating its solution to dryness. It is odourless, tasteless, and of a dark brown colour, and is completely insoluble in water, but is for the most part soluble in both ether and alcohol. Its insoluble portion augments every time the solution is evaporated. When dry, it is brittle and pulverizable. It is insoluble in both nitric and hydrochloric acids. In sulphuric acid it dissolves, and acquires a blood-red colour, but from this solution it is precipitated both by water and alkalies. It is soluble in alkalies.

The *insoluble modification of gaduin*, to which allusion has already been made, is blackish-brown, pulverizable, insoluble in water, alcohol, ether and diluted sulphuric acid, but by concentrated sulphuric and hydrochloric acid is converted into a black powder, without freely dissolving: in hot nitric acid it gradually and completely dissolves. It dissolves in alkalies, forming a red-coloured solution.

Berzelius states that, when he read De Jongh's account of gaduin, he was struck with the analogy of the reactions of this substance with those of bilifulvic acid, and he tells us that he was disposed to think that gaduin is primitive bilifulvic acid, and that the reddish-brown substance, insoluble both in alcohol and water, which he (Berzelius) separated from bilifulvin by long and numerous operations, is only the insoluble modification of gaduin. This point, however, at present remains undetermined.

Gaduin is contained in all the three varieties of oil examined by De Jongh. At first it is yellow, but under the influence of atmospheric air it acquires a brown colour.

2. *Fatty acids; margaric and oleic acids.*—These acids, as obtained from cod-liver oil, do not appear to differ in their nature and composition from the same acids procured from other sources.

3. *Glycerine.*—This was obtained by saponifying cod-liver oil by caustic soda. The residual lye was decanted from the soda-soap, saturated with sulphuric acid, and the sulphate of soda separated by crystallization. The residual glycerine was compared with glycerine procured from olive-oil and lead, and found to be darker coloured. All these kinds of glycerine were decolorized by adding basic acetate of lead to the glycerine solution, though they again became coloured when submitted to evaporation.

4. *Bile constituents.*—When cod-liver oil is shaken with water, an emulsion is obtained from which the oil slowly separates. The aqueous liquid becomes clear

by filtration. That which had been obtained by shaking the brown oil with water was coloured and empyreumatic; but the other kinds of oil did not colour the water. The liquid invariably had a slightly acid reaction, and the oil which had been shaken with it was clearer, had a feebler odour, and reacted less powerfully as an acid. By boiling the oils with water, the same results were obtained. By evaporation, the aqueous fluids from all the three kinds of oil yielded a reddish-brown extract, which, softened by heat, was slightly soluble in water, was more soluble in ether, and completely so in alcohol. Alkaline solutions dissolved it, and acids threw it down again in the form of a reddish-brown flocculent precipitate. The extracts had a peculiar odour and a bitterish taste.

By ether, a reddish-brown, transparent, glutinous extract was obtained, which melted by heat, stained paper, and had the odour and taste of bile. After some time, small crystals made their appearance in it. It was slightly soluble in water, but readily so in ether as well as in alcohol. A solution of carbonate of ammonia being added to its ethereal solution caused the separation of the mixture into two layers, an upper turbid layer, which by evaporation yielded some drops of *olein*, some crystals of *margarin*, and a *brownish mass* which was identical with that procured by the evaporation of the lower layer. This brown mass had a bitter taste, was separated by water into a soluble and insoluble portion, and consisted of *fellinate* and *cholate of ammonia*.

The extract which had been exhausted by ether, yielded to alcohol a blackish-brown, odourless, bitter, shining, hygroscopic mass, which dissolved with difficulty in water, and consisted of *biliverdin*, *bilifulvin*, and *bilifellinic acid*.

Dilute spirit removed from the residual extract a black shining substance, soluble in alkalies, concentrated sulphuric acid, and hot acetic acid, but insoluble in nitric and hydrochloric acids. From its alcoholic solution, baryta-water and acetate of lead precipitated it of a brown colour. It left no residue by burning.

The residue of the aqueous extract, left after the action of the three above-mentioned solvents, contained an *organic substance* (whose nature has not been determined) and *inorganic salts*, in which chlorine, phosphoric and sulphuric acids, lime, magnesia and soda were found, but no potash or iodine.

5. *Iodine, bromine and chlorine.*—Considerable, though as I conceive unnecessary, importance has been given to the fact that cod-liver oil frequently or usually contains both iodine and bromine. To the presence of one or both of these substances has been ascribed the whole or part of the remedial efficacy of the oil. A little consideration, however, would be sufficient to prove that their therapeutical agency in the oil must, if any, be exceedingly small. The proportions in which they exist in the oil are inconstant, though in all cases very small. Moreover, beneficial effects have been produced by the use of the oil, which neither iodine nor bromine is capable of producing.

Some chemists have failed to detect *iodine* in cod-liver oil. De Jongh says, that it is present in every genuine oil, but that the only certain mode of detecting it is to saponify the oil, and carbonize the resulting soap. He confirms Stein's remark, that neither by immediately carbonizing the oil, nor by saponifying it, and then decomposing the soap by acids, can the iodine be detected. It follows, therefore, that iodine exists in the oil neither in the free state nor in that of metallic iodide, but probably in organic combination—perhaps, as an iodic fatty acid.

The largest amount of iodine found in genuine oil is less than 0.05 per cent. If the amount obtained be larger than this, fraud may be suspected. It is said by Dr. Martiny that some dishonest druggists have introduced iodine into the oil for the purpose of augmenting its commercial value. Nay, it is stated that an artificial cod-liver oil has been made by combining iodine with common fish or train oils.

De Jongh detected *bromine* in the oil by Balard's process. The carbonized soap was digested with alcohol, and the alcoholic extract treated with chlorine gas and ether. Its proportion was estimated in conjunction with that of chlorine, as the quantity was too small to admit of accurate separation.

The *chlorine* was determined by precipitating it as chloride of silver from the watery extract of the carbonized soap.

6. *Phosphoric and sulphuric acids.—Phosphorus.*—De Jongh determined the presence and quantity of these ingredients in the following way:—The oil was saponified by potash, and the soap thus obtained decomposed by hydrochloric acid, by which the fatty acids were separated. From the solution the phosphoric acid was precipitated by a nitrate of iron (whose proportions of oxide was known) and ammonia, and the sulphuric acid by means of nitrate of baryta.

In order to determine the presence and quantity of free phosphorus or sulphur, a given quantity of oil was decomposed by concentrated nitric acid, and the quantity of phosphoric and sulphuric acids in the oxidized liquid ascertained by the above-mentioned method. More phosphoric acid was procured from the oxidized than from the unoxidized liquid, and the proportion of phosphorus was calculated from the excess of acid.

7. *Acetic and butyric acids.*—De Jongh separated these volatile acids from cod-liver oil. Rancid cod-liver oil emits an odour like common fish, or train-oil, and we might, therefore, expect that phocenic acid would be a constituent of cod-liver oil. De Jongh did not detect it; but thinks that phocenic acid may perhaps be resolvable into acetic and butyric acids—a supposition somewhat improbable, seeing that phocenic acid contains considerably more carbon than either butyric or acetic acid. Berzelius observes, that the presence of acetic acid in cod-liver oil, in a form which is not extractable by water, is remarkable, because it leads to the supposition that it is contained in the form of a peculiar fat, which would be the acetate of lipule.

The characters by which we judge of the genuineness, purity and goodness of the oil are partly physical, partly chemical.

The physical characters which are usually employed are principally colour, odour and flavour. The finest oil is that which is most devoid of colour, odour and flavour. The oil as contained in the cells of the fresh liver is nearly colourless, and the brownish colour possessed by the ordinary cod oil used by curriers is due to colouring matters derived from the decomposing hepatic tissues and fluids, or from the action of air on the oil. Chemical analysis lends no support to the opinion, at one time entertained, that the brown oil was superior, as a therapeutical agent, to the pale oil. Chemistry has not discovered any substances in the brown oil which could confer on it superior activity as a medicine. On the other hand, the disgusting odour and flavour, and nauseating qualities of the brown oil, preclude its repeated use. Moreover, there is reason to suspect that, if patients could conquer their aversion to it, its free use, like that of other rancid and empyreumatic fats, would disturb the digestive functions, and be attended with injurious effects.

Of the chemical characters which have been used to determine the genuineness of cod-liver oil, some have reference to the iodine, others to the gaduin or to the bile constituents. I have already stated that some fraudulent persons are said to have admixed iodine (either free iodine or iodide of potassium) with train oil to imitate cod-liver oil. The presence of this substance may be readily detected by adding a solution of starch and a few drops of sulphuric acid, by which the blue iodide of starch is produced; or the suspected oil may be shaken with alcohol, which abstracts the iodine.

But though we may thus readily prove that the suspected oil contains no artificially added iodine, the iodine which is naturally contained in, and more intimately combined with, the oil, may be frequently recognized by another process. Marchand gives the following directions for detecting it:—Saponify the oil with soda, carbonize the soap thus obtained, digest the coal in distilled water, add a drop of starch paste, and subject the mixture to the action of a voltaic battery, the positive pole being placed in contact with the starch paste, the negative pole with the solution. If iodine be present, the starch becomes blue. Marchand states that, by this test, the iodine can be detected in the urine of a patient soon after he has taken the oil. This, however, is certainly not always correct, for I submitted the urine of a young gentleman, who for several weeks had taken with great benefit a tablespoonful of cod-liver oil thrice daily, to the action of a galvanic battery of fifty pairs of plates for several hours, without obtaining the slightest evidence of the presence of iodine.

Sulphuric acid has been employed as a test for cod-liver oil. If a drop of concentrated sulphuric acid be added to fresh cod-liver oil, the latter assumes a fine violet colour, which soon passes into yellowish or brownish-red. Some samples of oil produce at once the red colour, without the preliminary violet tint. Gobley, who noticed this reaction in the case of oil of the liver of the ray, says, that oil which has been prepared by ebullition in water, does not possess this property, but yields with sulphuric acid a clear red colour. This, however, is an error, at least with respect to cod-liver oil. It has been erroneously supposed by some persons that this violet colour was due to the evolution of iodine by the action of the acid on an alkaline iodide contained in the oil. If that were the case, the presence of a little starch-paste would be sufficient to convert the violet into an intense blue colour; which is not the case. The coloration in fact depends on the action of the sulphuric acid on some one or more organic constituents of the oil, and the following facts lead me to infer that it is in part due to the presence in the oil of one of the constituents of the bile.

It is well known that, in 1844, Pettenkofer pointed out a new test for bile. If to a liquid supposed to contain bile, about two-thirds of its volume of oil of vitriol be added, the liquid kept cool, a few drops of a solution of cane-sugar (four or five parts of water to one of sugar) be added, and the mixture shaken up, a violet red colour is produced, provided bile be present. This test succeeds very well, if we dissolve a little extract of ox-bile in water, and test the solution with sugar and oil of vitriol. The colour developed agrees with that produced by the addition of oil of vitriol to cod-liver oil, which De Jongh has shown, contains the essential constituents of the bile.

Pettenkofer remarks, that the presence of a very great excess of chlorides will change the violet-red colour into a brownish-red. This fact is deserving of notice, because it may aid in accounting for the fact that some specimens of cod-liver oil strike a brownish-red, not a violet-red colour, with oil of vitriol.

Strecker confirms Platner's observation that both cholic and paracholic acids produce the same colour with sugar and oil of vitriol, as bile does; so that Pettenkofer's test doubtless acts on one or both of these acids. Now de Jongh has shown that cholic acid is contained in cod-liver oil, and we have, therefore, good reason for believing that it is in part by the action of oil of vitriol on this acid that the violet-red colour is produced in cod-liver oil; but it is well known that for the development of this colour in bile it is necessary to use, besides oil of vitriol, a third agent (sugar). Pettenkofer observes that for cane-sugar we may substitute grape-sugar or starch; in fact, any substance which can by the action of oil of vitriol be converted into grape-sugar. No such substance has hitherto been detected in cod-liver oil, and therefore it may be said the necessary ingredient to produce this characteristic reaction of oil of vitriol on cholic acid is wanting. Strecker has recently supplied the wanting link. In his valuable paper on ox-bile, to which I have already referred, he observes that acetic acid may be substituted for sugar. To the liquid supposed to contain bile add a few drops of acetic acid, and then concentrated sulphuric acid, when a magnificent purple-red colour is developed. If the quantity of bile be small, it may be necessary to use heat. Now, as cod-liver oil contains acetic acid, we have the requisite agent to enable the oil of vitriol to act on the cholic acid, and the development of the purple or violet-red colour is then readily accounted for.

I have already noticed the red colour produced by the action of oil of vitriol on gaduin (supposed by Berzelius to be derived from the bile). Here, then, is another source for the red colour caused by the action of sulphuric acid on cod-liver oil.

It follows, therefore, from what has been now stated, that oil of vitriol is a test for liver oils. It does not distinguish one liver oil from another, for it reacts equally with the oil of the liver of the ray and with the oil of the liver of the common cod. Neither does it distinguish good cod-liver oil from bad, for it produces its characteristic reaction both with common brown cod oil, and with the finest and palest qualities. But it serves to distinguish oil procured from the liver, from oil obtained from other parts of the animal.—*Dub. Med. Press*, Feb. 16, from *Pharmaceutical Journal*.

9. *Physiological and Therapeutic Action of Atropia.* By MM. Bouchardat and Stuart-Cooper.—The authors of this memoir maintain the superiority of atropia over the other preparations of belladonna for internal as well as external use, and have undertaken the present investigation to determine with more accuracy its physiological and medicinal action.

It was already known that rabbits could eat belladonna leaves with impunity; and MM. Bouchardat and Cooper have repeated the experiment in a very conclusive manner. Two rabbits were fed exclusively on belladonna leaves for a month without their health suffering in the slightest degree. The only observable effect was slight dilatation of the pupil.

To determine whether or not this inactivity was owing to the destruction of the active principle in digestion, they placed under the skin of a rabbit, successively at several days' interval, 1 centigr., 5 centigr., and 0.15 gramme ($\frac{1}{4}$—17 grs.) without giving rise to more than temporary uneasiness. [The authors observe, "Their experiments demonstrate that the atropine cannot be considered a poison to rabbits." We do not think that the experiments warrant this conclusion, inasmuch as the atropine was introduced into the cellular tissue in the solid form. The fluids which it meets with there, having an alkaline reaction, are not adapted for its solution, and hence the absorption of the poison is probably conducted very gradually. Now, a dose of any narcotic, however powerful, which would prove poisonous if taken at once into the circulation, will exert little or no effect if introduced in a very slow and gradual manner. It is very possible, therefore, that if the atropine in the above experiments had been employed in the form of solution, the result would have been different.]

Introduced in the solid form into the cellular tissue of *dogs* in doses of $1\frac{1}{2}$ and $2\frac{1}{2}$ grs., it occasioned, after a few minutes, weakness, inability to walk, and shivering. After an hour or two, these symptoms disappeared, and the animals recovered their normal state.

Ten centigr. ($1\frac{1}{2}$ grs.) dissolved in some water, with the aid of a drop of muriatic acid, were injected into the crural vein of a moderate-sized dog. Immediately the animal uttered an acute and prolonged cry, then suddenly fell, to all appearance, dead, with the body relaxed and motionless. Five to six minutes passed without any appearance of life; then he began to moan slightly, and to the great surprise of the experimenters, rapidly recovered. This experiment was often repeated with the same result, the dose being so high, in one instance, as 0·30 gramme ($4\frac{2}{3}$ grs.). Thus, although its action in dogs is very remarkable, its power to destroy life does not appear great.—*Monthly Retrospect*, Jan. 1849.

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10. *The Advantages of Chloride of Gold as a Caustic.* By M. Chavannes.—MM. Récamier and Légrand signalized the advantages of the chloride of gold as a caustic many years ago—and our author confirms their statements from observations made chiefly in the treatment of lupus and syphilitic tubercles and ulcers. M. Chavannes maintains that the chloride of gold destroys less than the other caustics, and, when the crust separates, cicatrization is found in a forward state of advancement. The cicatrix which remains after the use of this chloride, is said to be less marked than when other caustics are employed. It is prepared thus: gold leaf one part, hydrochloric acid three parts, nitric acid one part.—*Month. Ret.*, Feb., from *Gaz. Méd. de Paris*, Dec. 23, 1848.

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11. *Nutritive Properties of Bran.*—M. Millon has communicated to the Academy of Sciences the result of some interesting investigations of his concerning the ligneous matter of wheat, whence it would appear that bran is a very nutritive substance. Though bran doubtless contains from five to six per cent. more ligneous substance than flour, it presents more nitrogenous matter, twice as much fatty matter, and moreover two distinct aromatic principles, one of which possesses the fragrance of honey; and these are both wanting in flour. Thus, by sifting this wheat impoverished in nitrogenous matter, fat, fecula, aromatic, and sapid principles, in order to free it from a small proportion of ligneous substance. M. Millon, therefore, thinks that bran and meal ought to be ground over again and mixed with the pure flour, and he has found, by repeated

experiments, that this mixture yields a superior kind of bread, and free from the inconveniences of that bread which, in some countries, and particularly in Belgium, is made with coarse meal.—*Lancet*, Feb. 10, 1849.

12. *Vegetable Infusions.*—M. Donovan says, that infusions of angustura, orange-peel, cloves, cascarilla, catechu, colomba, gentian, quassia, rhubarb, senna, simarouba, valerian, and perhaps others, may be easily made to assume the concentrated form. If these infusions be directed to be prepared four times the strength of those at present in use, then one part mixed with three of water, will give the article required. The liquor on which the infusions are to be made should be a mixture of three parts of water with one spirit of wine. An infusion made in this way will remain unchanged for any required time, at least a year, and perhaps many years. If an ounce of such an infusion be mixed with three of water, each tablespoonful will contain one-quarter of a drachm of spirit which could not do injury, even though repeated every two hours. It will, perhaps, answer the purpose better to make use of the mixture of spirit and water, for infusing the materials, than to use mere water, and afterwards to add spirit. In the latter method a precipitation of gelatinous flakes, sometimes considerable in quantity, takes place, which very slowly subsides, and constitutes no small portion of the total bulk. In the former method, this inconvenience is in a great measure avoided, although there is a trifling loss of spirit. The residuum in each case should be submitted to the screw press. Such concentrated infusions would in all probability become articles of manufacture with the large druggists and the manufacturing chemists; and thus would the apothecary be relieved of a vast deal of unavailing trouble.—*Dublin Med. Press*, Dec. 20, 1848.

MEDICAL PATHOLOGY AND THERAPEUTICS AND PRACTICAL MEDICINE.

13. *Case of Hydrophobia Spontanea.* By Dr. Mombert.—Such is the appellation bestowed by Dr. Mombert upon a case recently published by him, of a most interesting character in its details, though unfortunately imperfect, from the absence of a post-mortem examination.

Dr. Mombert was sent for early on the morning of the 24th July to see a lad (æt. 12), who had been indisposed for a day or two before, apparently from having become chilled while hot. He found him with a slow and feeble pulse, pain in the head, contracted pupils, and difficulty of deglutition; his secretions, tongue, and skin being in a normal condition. While quietly talking, he suddenly started from the arms of his parents, struck his head with the rapidity of lightning, screamed aloud, and distorted his eyes and limbs in the strangest manner. In a few minutes all was calm, and he continued his narration. This paroxysm produced little effect upon his pulse, and was repeated with the same vehemence every few minutes, the attacks differing from epilepsy, in the retention of complete consciousness. Sinapisms to the feet, warm clysters, and calomel, were ordered.

Two hours after, the author found the parents vainly engaged in trying to administer a powder in water, the child declaring he could not swallow, and raging frightfully when they attempted to make him do so. He crushed the spoon between his teeth, and the fluid flowed out at the angles of the mouth. The same occurred when water or chamomile tea was offered. He ate an apple, however, thick potato-soup, and the like, with appetite. He declared his willingness to take anything, but that he could not get fluids down, and shuddered at their mere sight. No affection of the throat existed. The paroxysms of convulsions, screams, and raging continued, so that several strong men could scarce restrain him. As the carotids beat strongly, the pulse had become hard and quick, and the pain in the head was very great, cold was ordered to the head, and a venesection at the foot. But when the patient attempted to place his foot in water, the hydrophobic symptoms redoubled in intensity; and when, by the

exertions of four men, he was made to do so, the ghastliness of his features evidenced the anguish he endured. His respiration became short; he could neither swallow nor spit out his saliva; and now commenced biting those about him. For a while after the Vs., the paroxysms seemed less intense, but towards the afternoon, they returned as badly as ever; his propensity to bite those about him, or even himself, increasing. When those who held him slackened their hold, he, in the full possession of consciousness, entreated his friends to keep at a distance, lest he should bite them. No mitigation after this occurred, and he died at three in the afternoon. The most careful external inspection showed no traces of any bite, and his relatives felt certain he had not been bitten; and yet the symptoms were not to be distinguished from those which the author had witnessed in true hydrophobia. All the persons bitten by him continued well.—*Brit. & For. Med.-Chir. Rev.*, Jan. 1849, from *Walther & Ammon's Journ.*, Bd. viii.

14. *On Muscular Rheumatism.* By M. Valleix.—The essential character of this affection is *pain*, and no anatomical lesion belongs to it, unless it become complicated with other affections. It possesses various analogies with neuralgia, and the two affections may be easily transformed into each other. If the pain remain concentrated in the nerves, we find isolated, characteristic, painful spots —a *neuralgia*, properly so called. If it spread to the muscles, the contractions of these are especially painful, and *muscular rheumatism* is present; while if it extend to the skin, we have a *dermalgia*. All these forms of the same affection may unite together, or by two and two.

The *diagnosis* of *acute* muscular rheumatism from inflammation is generally easy, owing to the absence of the well-known signs of the latter. It becomes more difficult when the muscles over a joint are those affected; and on no account can the identity of muscular and articular rheumatism be admitted. In respect to its diagnosis from neuralgia, it may be observed that it is much more rare to mistake a rheumatism for a neuralgia, than the reverse. In rheumatism, the pain and tenderness are more diffused, and are found rather at the attachments of muscles than in the course of the nerves. Muscular action causes an amount of suffering altogether disproportionate to the other spontaneous or excited pains; while in neuralgia the reverse is generally observable.

Prognosis. *Chronic* muscular rheumatism is more obstinate than chronic neuralgia; while exactly the reverse is true of the *acute* form. However severe, it is rare to see it continue longer than a week: while neuralgia may persist, with all its original severity, for weeks or months. Rheumatism is generally a far less serious affection than neuralgia; it does not produce the same perturbation of the economy, and is more easily dissipated. The same is true of the *chronic* form, for we only now and then see paralysis of one or several muscles result; while the subject of neuralgia not unfrequently continues to lead a miserable existence, deprived of the use of his limbs.

Treatment. These two diseases have too often been treated alike, and with great mischief to the subjects of them; for while bleeding may benefit rheumatism, it is very hurtful to neuralgia; and flying blisters and intercurrent cauterization, so useful in acute neuralgia, are of little avail in rheumatism. In *chronic* cases, hydrotherapeia, shampooing, and thermal waters are more useful in rheumatism than in neuralgia: but in this stage the treatment of the two diseases approximates much more than in the acute one.

Among the different species of muscular rheumatism may be noticed that which affects the *muscles of the head;* sometimes the occipito-temporal, the masseters, or temporals, and at others the muscles of the eyes or cheeks being those which suffer. This pain is distinguished chiefly by the exacerbation which is produced by causing the sudden movement of the muscles affected; furnishing a far stronger contrast with the spontaneous pain than is the case with other pains of the head, as well as by being limited to the muscles in question. This form best yields to the external application of the *cyanide of potassium;* and of all forms of cephalalgia it is that which is least benefited by blistering the nape, so indiscriminately resorted to. This rheumatism of the head is found also generally worst on rising in the morning, especially in *moderately* cold and damp weather. This is attributable to the parts having been exposed to the cold

during the night (from which they would have been protected in *very* cold weather), and the simple precaution of covering them with a cap or handkerchief has not unfrequently relieved pains which have long obstinately persisted.

Besides a *torticollis*, rheumatism may show itself in the cervical region in the form termed by the author *cervicodynia*, in which there is a very variable amount of dull pain felt along the cervical region, and even extending to the epicranial muscles. It is much aggravated by stretching the head backwards, or keeping it bent forwards. It is easily transformed into a neuralgia, and may become confounded with this, as it may with congestion of the brain, when it extends to the pericranial muscles. The most successful means are, sea-water baths, cold affusion, cupping, and acupuncture. When the affection becomes chronic, it is very obstinate.

One of the most obstinate forms of muscular rheumatism, as also one of the most important, as it may lead to *paralysis of the deltoid*, is *rheumatism of the muscles of the shoulder*. In its acute form, it is distinguished with difficulty from articular rheumatism or acute arthritis. In its chronic form, it sometimes induces the above-named paralysis. Several cases are related by authors, in which paralysis supervened on painful affections of the shoulder; but these are, for the most part, too imperfectly reported to enable us to judge whether this arose from chronic muscular rheumatism or inflammation. Others are more explicitly detailed, and two of these are quoted by the author, in which acupuncture, after the failure of other remedies, effected a cure.—*Brit. and For. Med.-Chir. Review*, Jan. 1849, from *Bulletin de Thérapeutique*, tom. xxxv.

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15. *On Bilious Pneumonia.*—Dr. Martin Solon relates two cases confirmatory of the existence of this form of pneumonia, formerly so generally, and now so rarely admitted; and he believes that the epidemic bilious pneumonias and pleurisies of the older writers were correctly described as such, just as sporadic cases may be at the present time. A chief circumstance that has prevented the recognition of bilious pneumonia, is the fact of the occasional co-existence of a pneumonia with inflammation of the liver or biliary canals. It is true we have here biliary symptoms, such as jaundice, &c.; but these depend upon the hepatitis, and yield to the antiphlogistic treatment which is as proper for it as for the pneumonia. Here the symptoms of the two diseases are found united, and with the burning skin we have the full hard pulse, and red, dry, cracked tongue; while the green colour of the serum of the blood, developed by nitric acid, diminishes in proportion as the phlegmasia is relieved. But the case is different when the biliary affection is a simple secretory modification, whose influence, without changing the physical signs of the pneumonia, gives to the general condition, and to the progress of the disease a peculiar character—the pneumonia now resisting continued antiphlogistics, and yielding to evacuants. In one of the cases here related, the pneumonia which had resisted two venesections, yielded after free bilious stools were procured by purgation—the amount of biliverdine of the serum of the blood (obtained by a local bleeding) being also diminished. In the second case, the elements of the bile were found not only in the serum, but also in the urine and the expectoration. The severity of the disease did not diminish after the loss of 60 oz. of blood, the tinge of the serum becoming also deeper and deeper after each venesection; and real amelioration only took place after copious bilious stools had been procured, and the serum of a small exploratory blood-letting then furnished no further traces of bile. Cases like these should lead us to admit the truth of Stoll's description of bilious epidemics; and that he had no preconceived ideas upon the subject, is shown by the fact that he knew not at first what treatment to pursue.

Nothing can be more easy than the detection of the biliverdine in the serum. If we drop 10 or 12 drops of nitric acid into two or three spoonfuls, the colouring matter will be found to dispose itself in different coloured zones, one over the other. At the bottom of the glass is seen the yellow colour which all animal matter assumes on combining with the acid: a little above this we see a rose-coloured zone, and a little higher still, other zones of different shades of bluish-green; and finally a zone of more or less deep green. The same zones

thus disposed rainbow-wise, may also be seen in the urine; but as respects the expectoration, nothing but the green is developed.

M. Solon remarks that tartar emetic employed in pneumonia, sometimes cures by its contra-stimulant power without inducing vomiting; but at other times it does so by exciting bilious evacuations.—*Brit. and For. Med.-Chir. Review*, Jan. 1849, from *Bulletin de Thérapeutique*, tom. xxxv.

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16. *Melæna Neonatorum.* By Dr. Rilliet of Geneva.—The new circumstances in which is placed the infant, the delicacy of its organs, the novelty of the functions they are suddenly called upon to perform, predispose it to certain forms of hemorrhage, more special in their causes than in their symptoms or results. The most frequent are those which occupy the brain, or spinal cord; the former bears the name of apoplexy, the latter of tetanus. A more uncommon variety is hemorrhage from the stomach or bowels, and is known under the denomination of melæna neonatorum. Hesse (in 1825), Rahn Escher, of Zurich (1835), Kivish, and Hoffman, have published isolated instances of the disease; Billard and Barrier, in France, also speak of the complaint; and two cases were published in England by Dorington and Gairdner.

In referring to the cases hitherto published, children of the male sex seem, more than female infants, predisposed to the malady, and it usually occurs during the first four days of extra-uterine life. The predisposing causes should be sought for in the naturally congested state of the gastro-intestinal mucous membrane of infants—a circumstance which may be increased by enlargement of the liver or spleen, or any other cause of obstruction within the abdomen sufficient to occasion hemorrhage; and, secondly, in the difficult establishment of respiration. The lungs not admitting readily the blood, that fluid distends the other organs, and specially the already congested intestines.

The disease more frequently makes its appearance after the evacuation of meconium; the discharge of blood from the anus is usually the first symptom, and in more than one-half of the cases precedes hematemesis. The hemorrhage is generally considerable, and in most cases attains its height during the first twenty-four hours. The general symptoms are those habitually concomitant with loss of blood, viz., paleness of the face, refrigeration of the surface and extremities, extreme feebleness of the pulse, irregularity of respiration, and (seldom) convulsions. The local symptoms are all negative; the infants are too weak to suck, the abdomen is not tender or distended. M. Rahn Escher specially insists upon the consequences of the loss of blood upon the constitution of the child. The patient remains pale, thin, and subject to diarrhœa and convulsions.

With regard to the prognosis of the malady, Dr. Rilliett observes, that of twenty-three cases on record, the issue was fatal in eleven cases; in nine of the remaining instances, the recovery was rapid and complete; but in the three others the constitution remained a long time much deteriorated by the illness. The treatment recommended by M. Rilliett consists in cold applications to the abdomen, whilst heat is carefully applied to the extremities. Enemata he rejects as useless, because their action is confined to the large intestine, which is not the seat of the disease. The nurse's milk should be given in a spoon until the child has recovered sufficient strength to take the breast, and a gentle cordial should be exhibited in cases of alarming weakness.—*Med. Times*, Jan. 6, from *Gaz. Méd. de Paris.*

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17. *Chorea.*—Dr. Elam, in a paper read before the Sheffield Medical Society, (Nov. 16th, 1848), observed that the disease now known by the name of chorea seems to be perfectly distinct in its nature from that to which the name chorea or chorea Sancti Viti was originally applied; very little is known of the latter by practical experience in the present day. It was a much more formidable disease, and frequently fatal, but we have no records by which to ascertain its pathology. The cases to be related are all of the modern chorea. Cullen's account also differs from the present type of the disease in several particulars; with regard to the voluntary nature of the actions, which should rather be described as automatic, the too prominent limitation of the convulsions to one

side, and the comparison of them to the gestures of actors. Sydenham's description approaches more nearly to the present type.

Dr. Elam related a case bearing upon the question as to how far these motions may be considered voluntary, and regarded the case as pointing to the probability that they are rather of an automatic character, similar in nature to the action of the respiratory muscles.

E. D., 9 years of age, had been suffering from chorea three weeks. When sitting up in bed, taking her breakfast, the peculiar distinction between the voluntary and automatic motions was remarked, for whilst eating, the right arm acted regularly in carrying the spoon to the mouth, whilst the left arm and both legs were violently convulsed, yet not a drop of the food was spilled; but when the girl, instead of eating instinctively, as it may be called, was told to do anything with the right hand, or asked to give her hand, she did it in the jerking irregular manner so characteristic of this affection.

The effect of music upon the ancient form of St. Vitus' dance seems to indicate that whilst volition has but little influence in itself in controlling the irregular actions of the muscles, yet by external agencies acting through the senses, an instinctive modification of these actions may take place, and if persevered in, the habit may be broken altogether. Another peculiarity in these motions is that, in defiance of their apparent irregularity, there is a sort of rhythm or order —a series of actions recurring with greater or less constancy. This is most manifest in the milder forms. In some cases it is confined to a periodical twitching of some one or more muscles of the face or eyeballs. In one case both eyeballs were turned so far upwards and laterally, as almost to hide the iris. This, and a corresponding twitch of the orbicularis, were the constant and only symptoms, and recurred with tolerable regularity every forty seconds. As the cases become more violent, the regularity of the motions becomes less evident, one class of spasms interfering with and modifying the others; in one very violent and fatal case, however, the *recurring character* of the convulsions was evident almost to the last.

For the production of these motions, if they are acknowledged to be of this character, there must be a stimulus acting upon the extremities of an excito-motor nerve, and the impulse reflected from the motor centres upon the muscular system. In health, stimuli of a certain character are constantly applied to the extremities of these nerves. To produce disease, either the stimulus must be increased in intensity, or the extremities of the nerves must be in a more irritable condition, and to the latter cause must the production of chorea be almost invariably attributed. In almost every case the cause must be looked for in some local or general excitability (perhaps from irregular distribution of blood), in the extremities of the excito-motor nerves, compelling them to respond in a more vigorous, and consequently, irregular manner, to the ordinary physical agents. It seems probable, too, that this excitability is almost exclusively manifested in the alimentary canal, the uterus, or the skin.

Dr. Elam then related several cases in which the alimentary canal was almost exclusively involved, and stated, as a general rule, that when the stimulus is in excess the spasms are tonic, giving rise to *cramp*, but when the excitability of the nervous extremities is increased, they are clonic. The next case was one of a more complicated character, dependent on irritability of the peripheral nerves of the intestines.

E. S., aged 8, suffered from the usual symptoms of chorea. Purgatives and carbonate of iron were prescribed, and though the tumid bowels were relieved, the jactitations were only rendered more violent. Every variety of tonic was tried, and each successive change in the medicine seemed but to aggravate the characteristic symptoms. The pupils having become more dilated, and more insensible to light, with pain in the head, a blister was applied to the neck, and the result was a great aggravation of the symptoms. At last mercurial liniment, with opium, was rubbed over the abdomen, and the improvement was immediate. Tonics were now given with good effect, and the recovery was complete.

Dr. Elam next detailed several cases connected with affections of the uterus. These cases generally occur when the function of menstruation is instituted.

There are, however, many striking exceptions to this rule. The following is an instance:—

A little girl, 8 years of age, was attacked with symptoms of inflammation of the uterus. There was pain in the hypogastric region, and a purulent discharge from the vagina, though no mischief could be detected in the vagina itself. A rather firm tumour could be felt just above the pubes, which seemed to be the uterus enlarged; treatment directed to this part removed the tumour, the discharge, the pain, and the chorea.

Two fatal cases were mentioned; they were of the uterine nature, about the same age, and with very similar symptoms.

J. C., aged 15, ill two weeks. When first seen the convulsions were very violent. She could give no account of herself, and her friends could give little more. It was impossible to ascertain whether any local affection existed. The agitation was so extreme, the distress of the countenance so terrible, that an experienced surgeon said, "If I must die of a convulsive disease, let it be tetanus rather than this." This continued quite unchecked by treatment for ten days, when she died.

The *post-mortem* appearances were peculiar, but confined to the brain, spinal cord and uterus. All the vessels on the surface of the brain and spinal cord were extremely gorged with blood, but this seemed to be rather an effect than a cause of the violent and long-continued agitation. The apparent origin of all the mischief was found in the lining of the uterus, which was extremely congested, and in one or two places a minute drop of blood had oozed out, indicating that the function of menstruation was just on the point of being set up, and if the patient could, as Dr. Watson suggests in fever, have been kept alive a little longer, she would ultimately have recovered. The system was on the point of relieving itself, but nature gave way in the effort.

The second fatal case was very similar to the one just detailed, both in the symptoms and *post-mortem* appearances.

In conclusion, Dr. Elam noticed the great similarity between chorea and tic, both as to their causes and the plan of treatment most successful in both. One attacks the motor and the other the sentient nerves; both are chiefly dependent on derangement of the intestinal or uterine functions,—both are generally diseases of debility,—both relieved by tonics,—and both are almost incapable of relief by narcotics.—*Provincial Med. and Surg. Journ.*, Feb. 21, 1849.

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18. *On Sanguineous Perspiration.* By Dr. Schneider.—It has often been a question whether, under any circumstances, blood is ever mixed with the fluid of perspiration in human beings. Dr. Schneider remarks that he has several times observed the phenomenon. He mentions having been once summoned to a healthy man, 50 years of age, who, for a period of twelve hours in succession, had travelled on foot: during the journey he had perspired much in his feet; and, on examining them at the end of it, they were found covered as high as the ankles with a sanguineous perspiration, which had also soaked into and stained his stockings. In another case of a healthy young man, Dr. S. mentions having noticed that, after violent exercise, the perspiration beneath the arms was of a bright red colour; and he quotes a similar case from Hoffmann.

In proof that the perspiration over the whole body may also be of a sanguineous character, he mentions one case in which it had been observed in a delicate man after copulation, and then quotes the following still more remarkable case from Paulini. While surgeon on board a vessel, a violent storm arose, and threatened immediate destruction to all. One of the sailors, a healthy Dane, 30 years of age, of fair complexion and light hair, was so terrified that he fell speechless on the deck. On going to him, Paulini observed large drops of perspiration of a bright red colour on his face. At first he imagined the blood came from the nose, or that the man had injured himself by falling; but, on wiping off the red drops from the face, he was astonished to see fresh ones start up in their place. This coloured perspiration oozed out from different parts of the forehead, cheeks, and chin; but it was not confined to these parts, for, on opening his dress, he found it formed on the neck and chest. On wiping and carefully examining the skin, he distinctly observed the red fluid exuding from the

orifices of the sudoriparous ducts. So deeply stained was the fluid, that on taking hold of the handkerchief with which it was wiped off, the fingers were made quite bloody. As the bloody perspiration ceased, the man's speech returned; and when the storm had passed over he recovered, and remained quite well during the rest of the voyage.—*Lond. Med. Gaz.*, Dec. 1848, from *Casper's Wochenschrift*, 1848.

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19. *Case in which the Physical Signs of the position of the Heart were deceptive.* By Dr. PICKFORD.—L. L., a labourer, æt. 55 years, had recently suffered from a severe attack of sciatica, but was otherwise a strong and healthy man. According to his account, for some time past he had experienced distressing paroxysms of dyspnœa. On the night of 26th August, 1845, these became greatly aggravated.

When seen by Dr. Pickford, he was in bed, in a half-sitting posture, leaning towards the left side, breathing laboriously; the countenance livid and bloated, expressing intense anguish; his skin bedewed with perspiration; his pulse frequent and small; the lower extremities, as high as the knees, œdematous. Closer inspection furnished the following information:—The left side of the chest was not moved in breathing—it was inclined forward; the left hypochondrium remarkably full, not manifesting the slightest fremitus; percussion gave an entirely dull sound from the clavicle down to the last rib, except that under the clavicle there was a faint trace of resonance, and some very indistinct and doubtful breathing; otherwise no respiratory murmur detectible. The right side was sonorous—in the lower part behind even somewhat tympanitic; in the upper part there was a loud respiratory murmur; in the lower part, here and there some mucous rattle corresponding with a difficult cough, attended with a scanty, thin, mucous expectoration.

Between the cartilages of the third and fourth ribs, to the right of the sternum, could be felt a somewhat feeble impulse of the heart equal to the force of the pulse; in the same spot the heart's sounds could be heard, as at its apex: hence, also, in a triangular space bounded by the clavicle above the sternum internally, and outwardly by a line drawn from the middle of the clavicle, percussion gave but little sound; none at all, indeed, in the middle and lower part of this space. Hence it was concluded that the heart had been forced to this spot out of its proper situation by extensive empyema of the left side.

The patient, from the painful urgency of the sense of suffocation, requested to be relieved by any means whatever. More than mere relief one could not expect from the patient's condition: expansion of the lung, if even paracentesis were performed, could scarcely be hoped for, since the disease, from June last, had been subjected only to a mere symptomatic treatment, for no other name can be given to a treatment which, began by an emetic, was varied with an occasional purgative, some morphia, and a little compound camphor liniment rubbed on the chest.

The poor fellow dreaded a return of his former anguish, and urged the performance of the operation, which at least afforded him a chance of at all events temporary relief; it was therefore performed the next morning, in the fifth intercostal space, about an inch and a half from the left nipple. Six pints of thickish, yellowish, albuminous fluid, containing fibrinous clots, were evacuated. By permitting a gradual flow the patient bore it well, and felt relieved; the diaphragm rose to its proper position, but the heart's impulse continued to be felt as before.

The relief lasted only until night; the patient sank, and died at eight o'clock the next morning.

On examining the chest, about five pints of fluid and coagulated fibrin were found on the left side of the chest. The lung was bound down to the spine by a tough membrane: the upper sixth was entirely free from air, being covered and held down by the thick pseudo-membrane. But there were other more remarkable changes: in the triangular space, where diagnosis had pointed out the position of the heart, was seen a body which seemed to be a very thin expansion of the pericardium, but which, on further investigation, proved to be nothing more than a membranous enlargement of the left lobe of the thyroid

gland, extending downwards and outwards beneath the clavicle, containing colloid matter. Closely attached to this tumour was the pericardium metamorphosed into a dense felt-like substance, three lines in thickness. The right side of the heart was somewhat dilated; the heart itself soft and pale, its parietes not hypertrophied; the valves were healthy, but bound down by adhesion. It was necessary to peel off the pericardium from the surface of the heart; it was also attached behind and to the left to the compressed lung; forwards and to the right it adhered to the thyroid tumour, and by this adhesion the apex of the heart had been dragged forwards, so that its impulse and sounds were transmitted to this part. The lungs were free from tubercle; the right was loaded with blood, and œdematous.

This examination, therefore, demonstrates that such an unusual combination of circumstances may occur as shall altogether deceive us as to the physical signs of the situation of the heart; it also divulges the results of a neglected pericarditis and pleuritis.—*Lond. Med. Gaz.*, Nov. 1848, from *Henle's Zeitschrift.*

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20. *On the Signs of Diseased Heart afforded to the Hand laid over the Præcordium.* By Prof. Jaksch.—The purring tremor (*fremissement cataire*) perceived in certain affections of the heart, is felt most distinctly when the flat hand is laid over the part of the præcordium corresponding to the point of the heart's impulse. When this peculiar tremor is dependent upon narrowing of the left auriculo-ventricular opening, it is perceived at the period corresponding to the diastole of the heart. Dr. Jaksch, however, states that he has observed it in cases of insufficiency of the aortic valves. For determining to which of these morbid conditions the tremor during the diastole is in any case due, he points out the following diagnostic signs:—If it occurs when the impulse is feeble, the heart broad (as indicated by increased lateral dulness on percussion), and the second sound increased, it is dependent on narrowing of the left auriculo-ventricular opening: if, on the other hand, it coincides with an increased impulse, an hypertrophied left ventricle (as indicated by a tremulous impulse and increased dulness, in the longitudinal direction, on percussion), and with absence of the second sound of the heart, it may be considered as most probably dependent upon imperfection of the aortic valves. In cases in which a contracted left auriculo-ventricular opening coincides with imperfect aortic valves, a purring tremor accompanying the diastole of the heart is sometimes observed coincidently with an increased impulse. The diagnosis of such cases is rendered sufficiently easy by the increased second sound audible in the pulmonary artery, the enlargement of the heart in its longitudinal and transverse direction, and the absence of the second sound from the aorta and the carotid arteries.

It is not uncommon, especially after pericarditis, that peculiar tremors or vibrations are produced within the pericardium, and may give to the hand laid over the region of the heart a sensation of grating, scraping, creaking, or even buzzing. The existence of previous pericarditis, the absence of change of form of the heart, the want of rhythm, and the variableness of the morbid sound, preclude much risk of error in the diagnosis.

By means of the hand laid over the præcordium, Professor Jaksch has perceived vibrations synchronous with the systole of the heart. 1. In cases of narrowing of the aorta from rigid semilunar valves. 2. In cases of dilatation, thinning and relaxation of the portion of the aorta immediately above the semilunar valve. 3. In aneurismal dilatation of the ascending aorta, accompanied by roughness of the internal surface of the vessel. 4. In some cases of true aneurism of the ascending aorta, with roughness of the orifice or internal surface of the same. 5. In a case in which numerous tendinous bands were stretched across the left ventricle near the orifice of the aorta. 6. In a case of perforation of the inner division of the bicuspid valve. 7. In inefficiency of the bicuspid valve, in consequence of rupture of some of the tendinous cords. 8. In narrowing of the ascending aorta. The sounds dependent upon disease of the aorta are perceived most distinctly when the hand is placed in the middle of the sternum, and is thence carried upwards and to the right, in the direction of the aorta.—*Ibid.*, from *Oesterreichische Medecinische Wochenschrift.*

21. *Polyform Concretions in the Cavities of the Heart.*—Dr. Bellingham read to the Surgical Society of Ireland (Jan. 20th), the following notes of two cases of polypus of the heart.

Case I.—*Large Fibrinous Concretions occupying the Right Cavities of the Heart.*—Eliza M'Donnell, aged 11, admitted into St. Vincent's Hospital, May 11, 1847. She has been seriously ill for three weeks only, which commenced with cough and oppression of the breathing, following measles; the parent of the child states that she had been always delicate, and had suffered previously from pain in the side, &c.

On examination, the countenance was dusky and congested; the respiration very rapid and very laboured; respirations 80 in the minute; pulse 160, feeble, but regular; cough distressing; sputa greenish yellow, thick and copious; dyspnœa and orthopnœa marked, the patient being quite unable to assume the recumbent posture. On percussion, the chest yielded everywhere a clear sound. On auscultation, a loud muco-crepitating râle was audible on both sides from the apex to the base before and behind.

The patient lived a very few days, and while under observation the dyspnœa was extremely urgent, so much so that on several occasions it was supposed she was dying; indeed, once she became partially comatose; she had also paroxysms in which the dyspnœa became most distressing, attended by a sense of impending suffocation; and she was obliged to remain in the sitting posture, or to lean forwards at these periods, or she writhed about as if in severe pain.

On a post-mortem examination, the bronchial mucous membrane was very much congested; at several points miliary tubercles were found particularly at the apex of one lung and near its base. The right auricle of the heart contained an exceedingly firm fibrinous deposit, which extended into the right ventricle, was adherent to its walls, and was of sufficient size to occupy nearly its entire cavity. It presented a very marked contrast to the post-mortem coagula contained in the other cavities of the heart.

Case II.—*Of large Fibrinous Concretions occupying both Ventricles of the Heart.*—Eliza Connor, aged 13, admitted into St. Vincent's Hospital, January 13, 1848. Three weeks since she was attacked with dyspnœa, cough, and pain referred to the lumbar spine. The dyspnœa was so severe that she could not lie down, and she has been unable to assume the recumbent posture ever since. The attack, she states, came on without any apparent exciting cause. Three or four months since, she was the subject of an attack of acute anasarca with albuminous urine, which was quite removed by treatment. The anasarca reappeared recently in the lower extremities.

The countenance is pale; the expression extremely anxious; the surface cold; the lower extremities œdematous; cough very troublesome; respiration greatly hurried and oppressed; debility considerable; sleeplessness and restlessness extreme; cannot remain in the same position for any time; intolerable sense of suffocation, with dyspnœa and orthopnœa, the patient being quite unable to assume the recumbent posture, or to remain in bed: she is obliged to sit up, and to lean constantly forwards.

On examination, no unusual dulness on percussion was observed at any part of the chest; the respiration was very frequent, and a sibilant, mixed in some places with a sonorous râle, was audible over both sides of the chest, from the apex to the base. Action of the heart pretty strong, its impulse felt somewhat lower down than natural; no abnormal murmur audible; heart's sounds somewhat obscured by the loudness of the râles developed during respiration. Pulse imperceptible.

January 15th. Pulse perceptible to-day, 130; the patient passed the entire night in a chair, unable to lie down or to remain in bed; had a little or no sleep; cough very troublesome.

25th. The patient is now able to lie down and to sleep in the recumbent posture; cough very trifling; the anasarca has in a great measure disappeared; dyspnœa not complained of; bronchitic râles only audible on a full inspiration.

Subsequently the anasarca returned, the cough became more troublesome, the dyspnœa increased, and was accompanied by sonorous and sibilous râles in the chest, with a subcrepitant râle at the base of both lungs. Fluid was effused

into the peritoneal cavity, and the patient after suffering intensely for a day or two from dyspnœa, sunk on the 13th of March, two months after her admission into hospital, and about eleven weeks from the commencement of the attack.

On examination, both ventricles were found to be in a great measure filled with solid masses of fibrine, which had a yellowish-white colour, was firm and elastic, adherent to the parietes, and extended through the auriculo-ventricular orifices into the auricles.

After offering some remarks on the manner in which polyform concretions are formed, Dr. Bellingham points out the symptoms to which they give rise.

The symptoms of polypous concretions in the cavities of the heart, he remarked, are such as might be expected to arise from an impediment to the passage of the blood through the central organ of the circulation, and the intensity of the symptoms will of course be proportionate to the size of the foreign body, and the rapidity with which it is formed. As the coagula coated with fibrine, which have been classed by writers with those formations, appear not to be formed during life, we may omit their consideration here.

When these concretions are developed rapidly, and when they quickly attain a considerable size, they give rise to a most intensely severe and distressing train of symptoms, as agonizing to the sufferer, and as distressing to witness, as perhaps any disease known. These have reference to the lungs rather than to the heart, and they were well marked in the two cases detailed. These are, dyspnœa suddenly occurring, accompanied by a feeling of impending suffocation and a distressing sense of oppression; with which are associated sleeplessness, anxiety, restlessness, inability to assume the recumbent posture, coldness of the surface, congestion, or extreme paleness of the face. The pulse is exceedingly small, feeble, and hurried, or it is imperceptible, although the action of the heart may be strong: the respirations are very frequent. In the two cases which I have related, in one of which the concretion occupied both ventricles, there was no intermission or irregularity of the pulse, nor any abnormal murmur accompanying the heart's sounds; neither was there any increased extent of dulness in the præcordial region, nor was the action of the heart confused or irregular: symptoms which have been laid down by writers as pathognomonic of the formation of a polypous concretion in the heart.

The diagnosis must always be one of some difficulty, particularly if we have not seen the patient previous to the occurrence of the symptoms due to its formation; the difficulty will be somewhat less if the patient had been previously under observation, when, if the train of symptoms which have been enumerated suddenly set in, the formation of a polypous concretion in the heart is probable, provided the disease under which the patient labours is such as to impede the circulation through the lungs or heart; and the diagnosis will be confirmed if there is no evidence either of a large effusion of fluid into either the pericardium or the pleura; or of the secretion of mucus into the bronchial tubes, either in such a quantity as to impede the entrance of air, or of so viscid a nature as to obstruct the passage of air into the lungs.

The development of these concretions in the cavities of the heart, particularly when they are of such a size as materially to interfere with the circulation through this organ, is usually quickly followed by the death of the patient. One of the cases which I have brought before the society this evening is interesting in this respect, that the patient lived for eleven weeks after the first symptoms set in, and not only lived, but the symptoms in a great measure subsided, so much so, that I was almost under the impression that my diagnosis was incorrect. The symptoms, in fact, were so intense upon the patient's admission, that she was not expected to survive through the next twenty-four hours; nevertheless, after a few days, the orthopnœa ceased, the dyspnœa diminished, the patient slept well, the restlessness and anxiety almost altogether subsided, and the anasarca of the lower extremities in a great measure disappeared. After a short interval, however, the symptoms returned with renewed intensity, and quickly terminated the life of the patient.

With respect to the treatment of cases of this description, it is clear that medical treatment can do little more than palliate symptoms; and the obvious indications are, to endeavour to support the powers of life, and to maintain the

circulation in as quiescent a state as possible. As to bringing about the resolution of the polypous concretion, the idea seems too absurd almost to be entertained; nevertheless, we find writers recommending the administration of substances supposed to be capable of dissolving polypi, or of rendering the blood more fluid, such as the salts of potass, or diluent drinks given freely; while others, among whom M. Bouillaud is the most conspicuous, consider that bleeding is the best measure that can be employed when these concretions have once formed.

The following conclusions appear to be deducible from the preceding details:—

1. That concretions occasionally form in the cavities of the heart, during life, of such a size as to impede the action of the valves, to obstruct the passage of blood through this organ, and to occasion the death of the patient.

2. That these concretions, although termed polypi, have no analogy whatsoever with polypi, either in appearance, composition, or mode of development.

3. That certain diseases of the lungs or heart, as bronchitis, pneumonia, endocarditis, valvular disease, &c., sometimes owe their fatal termination to the formation of these concretions in the cavities of the heart.

4. That the concretions which form during life in the cavities of the heart may consist either of fibrine or of lymph, or of lymph coated with fibrine.

5. That the concretions composed of fibrine are most frequent upon the right side of the heart, but may occur on both sides; and that the concretions which consist of lymph, or of lymph coated with fibrine, are usually found only on the left side of this organ.

6. That fibrinous concretions, whether they occur in amorphous masses, or in stratified layers, are deposited from the blood which circulates through the heart. That concretions composed of lymph, whether this forms the substance of the mass, or merely its nucleus, are deposited by the vessels which supply the heart itself with blood.

7. That fibrine, whether it constitutes the substance of these concretions, or whether it is deposited in concentric layers in the sac of an aneurism, is perfectly unorganized, and perfectly incapable of becoming organized. That lymph, on the contrary, is an organizable substance, and quite distinct from fibrine, with which it is still confounded by some physiologists.

8. That where pus has been found in fibrinous concretions contained in the heart, its presence is to be regarded as the result of phlebitis, not as a product of inflammation in a substance which is quite unorganized, and consequently incapable of undergoing such changes.

9. That increased extent of dulness in the præcordial region, confused or irregular action of the heart, intermission or irregularity of the pulse, or an abnormal murmur accompanying the heart's sounds, are not necessarily symptoms of the development of a polypous concretion in the cavities of the heart.

10. That no means are known by which polypous concretions in the heart, once formed, can be dissolved; consequently, the administration of substances which render the blood more fluid, or which are supposed to be capable of dissolving them, can have no useful effect.—*Dublin Medical Press*, Feb. 7th, 1849.

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22. *Pleuritis simulating Pericarditis.*—Dr. O'Ferrall exhibited to the Pathological Society of Dublin, the recent parts in a case of pleuritis, which was interesting from having simulated, during life, pericarditis. The young man who was the subject of this disease was aged 19; he had been six weeks ill before his admission into St. Vincent's Hospital, and had been for five weeks of that time in a fever hospital in Dublin. The symptoms he presented were, dyspnœa, anasarca, with considerable turgescence of the face, and blue, congested lips: pulse 140, but regular. The case having been considered by more than one expert stethoscopist to be pericarditis with extensive effusion, Dr. O'Ferrall proceeded to examine it, with the expectation of finding that disease; and, certainly, nothing, at first view, could be more like it. The patient lay on his back, slightly inclining to the left side. On percussion, the cardiac dulness appeared to extend beyond its normal boundaries; the heart pulsated a little above its usual place; it could be felt close to the ribs, and its action heard distinctly there without murmur or friction sound.

The very superficial position of the heart, rendering its impulse so remarkably palpable, even while the patient was lying on his back, led him to doubt the existence of pericardial effusion. If the position had been different,—if the patient had been sitting up and leaning forward, the heart might gravitate through fluid into contact with the parietes,—but in that case a friction sound might be expected. The dorsal position, with evidence of contact, and absence of frottement, led Dr. O'Ferrall to the conclusion that no pericarditis existed.

The chest was then examined, the patient having assumed a sitting posture. The dulness was found to extend over the whole of the left side, posteriorly as well as anteriorly. Upon placing the hands on the sides, and desiring the patient to speak, no vibration could be felt on the diseased side, while it was plain on the other. The intercostal spaces were slightly protruded. The motions of inspiration and expiration were less marked on this side than on the right. The respiratory murmur was very faint and distant. It was evident that an extensive accumulation of liquid existed in the cavity of the left pleura. The absence of displacement of the heart might perhaps be owing to adhesions of older date.

The treatment consisted in cupping, blistering, and the exhibition of mercury, followed by tonics and diuretics. Under these means the anasarca gradually subsided, a friction sound became audible over the back of the chest, and the dyspnœa diminished. According as the respiratory murmur increased, it was observed to be mixed with a crepitating rattle. He remained in a state of partial recovery for four months; but it was observed that his pulse continued very frequent, varying between 130 and 140; his urinary secretion, which had become copious, was now often defective in quantity; the dyspnœa began again to be troublesome. The mercury was exhibited a second time, but ineffectually. Anasarca again came on; the patient was attacked with hemoptysis; and, finally, died somewhat suddenly.

At the autopsy, the left pleura was found to be obliterated by adhesions, those near the anterior margin of the lung being fibro-cartilaginous, and evidently ancient. Nodules of pulmonary apoplexy were distributed through the left lung.

The pericardium, when cut open, was found to be smooth and polished on its internal surface, no trace of false membrane being present on any portion of its extent. The heart was enlarged, soft, and flabby, its cavities dilated and full of blood; the death had been by syncope: no valvular disease existed.

The morbid appearances were thus those of extensive pleuritis, pulmonary apoplexy, and enlarged, softened heart. But the question might arise, whether there might not have also existed a pericarditis, all traces of which disappeared under the treatment employed. But such a supposition was incompatible with the differences existing between the pericardium and pleura. If treatment had removed the effusion from the pericardium, why had it not prevented the organization of exuded fibrin in the pleura, and have also caused its absorption? If the extreme continued frequency of the pulse, without irregularity, and the violent action of the heart, be ascribed to a supposed pericarditis, let it be remembered that that lesion must have been cured, according to the hypothesis, four months before death, while the pulse remained as before.

Dr. O'Ferrall attributed the anomaly of the heart's not being displaced, to the existence of old adhesions at the anterior margin of the left lung; and he suggested that this might have been the cause of the cardiac distress which the patient suffered. Under ordinary circumstances, the heart, becoming displaced by the effusion, escapes, as it were, from the pressure; but, when tied to the parietes, and compressed by a weight of liquid from behind, it becomes placed under conditions analogous to those of effusion into the pericardium, and is consequently liable to simulate that disease. The displacement which usually occurs may in this point of view be regarded as salutary, and the slight degree of inconvenience often endured by patients in this state seems to favour the conjecture.—*Dublin Quarterly Journ. Med. Sci.*, Aug. 1848.

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23. *Encysted Tubercles in the Lungs.*—Dr. GREENE presented to the Dublin Pathological Society a specimen of the encysted tubercle of Bayle; a morbid

appearance so rare, that Laennec only saw four or five instances of it in a practice of twenty-four years, and Louis only mentions one case in his work on phthisis.

The female from whom the specimen was taken, was admitted into the Whitworth Hospital on the 1st of January, labouring under cough, attended with a frothy and mucous expectoration, which was tenacious, and excreted with some difficulty. She had inflammatory fever, with a quick and hard pulse, and urgent dyspnœa. On percussing the chest throughout, no amount of relative dulness could be detected; intense bronchial râles were everywhere audible, but no fine crepitus. On the supposition that the case was one of uncomplicated acute bronchitis, she was bled from the arm, and a solution of tartrate of antimony was administered. Under this treatment she improved so much, that she requested to be discharged, and left the hospital on the 8th, to resume, as she stated, her family occupations. She returned, however, in a fortnight, but greatly altered in appearance. She stated she had caught a fresh cold, and that the cough had returned. The dyspnœa was now intense, and she lay on her back, incapable, apparently, of making any exertion; the cough was constant, and the expectoration was of the same character as before. On again percussing the chest, no relative dulness was detected, either behind or before; the bronchial râles were heard, of the same intensity as when she first entered the hospital. The dyspnœa daily increased in severity, and she gradually sunk into a debilitated state, and died in a condition resembling asphyxia. The respiration throughout her illness was accelerated, and abdominal; the expectoration, which was frequently examined, never contained any tubercular matter: the feebleness of her pulse, and the sunken and livid aspect of her countenance, prohibited the adoption of any active treatment. On examining the chest, slight traces of interlobular pleurisy were found, such as weak adhesions between the lobes, and the deposition of a thin false membrane, more like the cellular tissue, than the ordinary product of acute pleuritis, and such as is frequently found in old people attacked with influenza, and in subjects worn out by chronic disease of the chest. The bronchial mucous membrane was intensely injected, and the traces of vascularity increased towards the terminal branches of the tubes. The longitudinal fibres of these latter were greatly hypertrophied. This hypertrophy was, doubtless, due to the constant irritation of the bronchial tubes and attacks of intercurrent bronchitis, which are known to supervene whenever the bronchial tubes are in contact, for a length of time, with morbid products, such as tumours, aneurisms, &c. At the posterior portion of both lungs, there was evidence of congestion and slight inflammation.

A number of rounded bodies, extremely hard and incompressible, were found in the lungs: some were small, others of considerable size, occupying both the upper and lower lobes. The morbid anatomy of these little bodies (several of which had been removed, and sections made through them) was very peculiar; the cysts in which the morbid matter was contained were similar to cartilage, very hard and elastic. Two membranes were distinctly observed on examining the section, the outer cartilaginous or fibrous, and the inner mucous, which latter was smooth to the touch, but unequal on its surface, sometimes containing little depressions. These cysts, in fact, possessed the same structure as chronic phthisical cavities, but on a very minute scale.

It would appear that these bodies had existed in the lungs for a long time; first, from the frequent inflammatory attacks of the lungs, to which the woman was subject, principally of intercurrent bronchitis, for which she had been repeatedly cupped, as was evident from the numerous scars on her back; and, secondly, from the age of the patient, who was near 60. It might be expected that the presence of so many solid bodies in the lung would be indicated by dulness on percussion, but it should be remembered that they were scattered uniformly through the organ, so that the relative clearness of one portion, in comparison with another, could not be observed. Thirdly, sound portions of the lung intervened between each of the cysts; and, finally, some of the air-cells became distended in consequence of the repeated attacks of bronchitis.

It was difficult, therefore, to diagnose these cysts by unequivocal physical

signs: but the frequent occurrence of bronchitis, without any obvious or assignable cause, should always induce us to suspect the proximity to the tubes of some source of irritation. In the present instance, the repeated attacks of irritation arose from the efforts of nature to empty the contents of the cysts into the bronchial tubes, as was evident from the little funnel-shaped prolongations observed on the circumference of the cysts, and which appeared to be the remains of bronchial tubes.

The interior of the cysts was occupied by matter, partly tubercular, and partly cretaceous, the latter being composed of phosphate and carbonate of lime. Dr. Greene concluded by remarking that an individual might reach a considerable age with these encysted tubercles in the lungs. The fibro-cartilaginous nature of the cyst isolated the tubercular deposit, so that, although such an individual might suffer from repeated attacks of bronchitis, he would yet escape the wasting hectic, which the coalescence of ordinary tubercle produces.—*Ibid.*

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24. *Phthisis in the Infant.*—Dr. Mayne presented to the Pathological Society of Dublin (Jan. 10th, 1846) some pathological specimens taken from a child a year old, who had died of extensive tubercular disease. He considered them important, as being explanatory of the difficulty so frequently experienced in diagnosing pulmonary phthisis at that early period of life,—a difficulty which depends upon the very advanced stage at which the disease often arrives, before the physical signs are sufficient to justify the physician in giving a positive opinion.

The child was brought to him early in June, labouring under a cutaneous eruption, which soon yielded to mild alteratives. The child, however, did not seem to recover its health; it looked delicate; it was soon attacked with cough and diarrhœa, and the abdomen became swollen and tympanitic. These symptoms were attended with insatiable thirst, and rapid emaciation: the respiration and circulation also became permanently accelerated, and towards the close, the stomach rejected almost every description of nourishment.

The constant cough and the incessant diarrhœa, with progressive emaciation, left but little room to doubt that the child's disease was phthisis; yet, although this opinion was formed as early as the beginning of August, no satisfactory physical signs were detected in the thorax, until about the 25th of November. At that period a considerable portion of the back of the left lung was found dull, and the respiration over the same extent of the surface became bronchial. After some further time, the same stethoscopic signs appeared at the corresponding part of the right lung, but at no period of the complaint were any stethoscopic indications of tubercular softening ascertained to exist.

The child died towards the end of December, and when the body was examined, tubercles were found in both lungs, and in the spleen, liver, kidneys, and mesenteric glands. They were all in the crude state, and were nearly equally developed in all parts of both lungs.

The difficulties which attended the diagnosis in this case, Dr. Mayne remarked, were thus explained:—Both lungs, from their apices to their bases, being equally the seat of tubercular deposit, all the advantages of *comparative* percussion and auscultation were lost, and as none of the tubercles had softened, the stethoscopic phenomena which depend upon this change, were also absent.

The naturally loud respiratory murmur of the infant's lung presents another difficulty; for, in consequence of the great clearness of the *natural* murmur, solid deposits accumulate in the pulmonary tissue, without producing the physical signs of solidification, to an extent which would be impossible in after-life. —*Dublin Quarterly Journal*, Aug. 1848.

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25. *Acute Tubercular Meningitis in the Adult.*—M. Levy, principal physician in the hospital Val de Grace, has reported three cases of this disease. In the first, the tubercular affection of the pia mater was complicated by softening of the brain, tubercles in the mesenteric and bronchial glands, pneumonia, with pulmonary apoplexy, tubercular pericarditis, &c. The patient was twenty-six

years of age. In the second case, besides the tubercular disease, there were, meningitis, softening of the brain, and tubercles in the lungs, kidneys, liver, and several other organs. The third case was an example of tubercular meningitis, developed as a sequence of measles, accompanied by chronic pleurisy, and preceded doubtless by numerous tubercles on the lungs, and the general tubercular diathesis.—*Journ. Psychol. Med.*, from *Bull. de l'Acad. Nat. de Médecine.*

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26. *Case of Variola in which the Eruption was found on the Mucous Membrane of the Colon.*—Dr. George Patterson read, to the Medico-Chirurgical Society of Edinburg, a case of small-pox occurring in a boy five years of age, unvaccinated—which proved fatal on the fourth day of the eruption—death having been preceded for about twenty hours by discharges of blood from the bowels, nose, and mouth, and the appearance of masses of ecchymosis beneath the integuments of the lower limbs. He exhibited a drawing of the appearances found in the colon after death. There had been pustules, greatly resembling those met with on the skin; and superficial incrustations, most abundant, and running together in the lower part of the intestines. Although most medical authorities were opposed to the opinion that small-pox could exist upon the mucous membrane of the intestines, it was maintained, and cases in support of it recorded, by Sir Gilbert Blane, Rostan, Froriep, and others. And when we consider the analogies between mucous membranes and the skin—the fact pretty generally admitted, that small-pox pustules can occur on certain of the mucous membranes; and the additional fact, which some of the very impugners of an appearance such as the present allege, that they have been met with on membranes entirely different in their nature, as the serous coverings of the liver and spleen—there seems no good reason to doubt the possibility of their occasional occurrence in the course of the intestinal canal. It must be admitted that the appearance is extremely rare; but this may be accounted for by the isolation of the mucous membrane of the bowels from the external air: and still more, on considering the secretions and other matters which are more or less constantly in contact with its surface, and are calculated to modify the appearance, endanger the integrity, and so prevent the maturation of the variolous pustule. In the present instance, death occurred at so unusually early a period of the case, that there had probably not been time for these causes to produce their usual results—either by obliterating the pustule altogether, or by converting it into an ulceration, which, when met with, many will not allow to be other than the mucous follicles themselves inflamed and ulcerated.

Dr. W. T. Gairdner (who had made the post-mortem examination along with Dr. Patterson) said their could be no doubt that the structure of the pustules in this case was identical with that of the variolous pustule. The variolous matter was always deposited, when in the skin, in the lower layers of the epidermis, and between it and the corion, which was only superficially ulcerated. In mucous membranes, the matter was thrown out between the epithelium and the submucous layer, and such was the case in the present instance; for, on removing the crusts, the injected submucous layer was seen flat and unbroken, excepting by a few minute points of superficial ulceration. This superficial form of disease could never be mistaken, as has been alleged, for the affection of the solitary glands, which invariably extended through the whole depth of the submucous layer. Dr. G. considered this an unequivocal instance of variolous eruption in the colon.—*Month. Journ.*, Feb. 1849.

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27. *Intra-Uterine Small-pox.*—Dr. Watson related to the Liverpool Medical and Pathological Society, the case of a lady who fell into labour just as a variolous eruption appeared on her skin. The child was born alive, with some spots upon the scalp, which soon showed the central depression of the variolous pock. Sir Arnold Knight instanced another case of a lady who laboured under distinctly-marked, almost confluent, small-pox at the period of her confinement: the child was born dead, and covered from head to foot with distinct variolous eruption. The lady recovered favourably.—*Lond. Med. Gaz.*, Dec. 1848.

28. *Nocturnal Neuralgia of the Forearm.*—M. Gamberini, in describing this singular disease, states that it commences by a pain at the end of the fingers of one hand, generally the two last, and then extends along the forearm, to within one or two inches of the elbow. The pain has always stopped there in the cases which have fallen under M. Gambérini's notice. The night is the time when the spasm occurs; and it becomes so severe as to prevent sleep, and draw forth the most piercing cries: nevertheless, with the daylight relief from pain occurs, and few patients then retain any feeling of the past sufferings. The part when examined, either before or during the attack, does not exhibit any visible alteration, neither tumefaction nor heat, although the patient, while the pain endures, complains of this latter sensation, and throws off the bedclothes, or anything else that may tend to increase the feeling. Cold applications, such as plunging the part into cold water, cause the most acute suffering; which is also increased by moving the limb. An evident crepitation of the tendons is occasionally heard, resembling the sound emitted by walking on snow. One limb only is generally attacked; and women are more liable to it than men, especially robust women, between twenty and thirty years of age, whose occupations require fatiguing motions of the upper arms.

In consequence of the regular periodicity with which the disease returned each evening, M. Gambérini was induced to exhibit the sulphate of quinine, but in vain. After trying several other remedies, he found that belladonna, made into an ointment as follows,—lard, ten drachms; extract of belladonna, four scruples, and used in frictions on the painful parts,—was possessed of the required efficacy. The general indications should be attended to at the same time: thus, in a strong, plethoric patient, in addition to the use of the belladonna, M. Gambérini employed bleeding with advantage.—*Journ. of Psychological Med.*, Jan. 1849, from *Il Raccoglitore Medico.*

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29. *Spontaneous cure of Ovarian Dropsy, by means of an Ulcerative Opening of the Cyst into the Bladder.* By J. H. Bennett, M. D., &c.—In a paper read to the Med.-Chirurg. Soc. of Edinburgh, in Dec. 1845, Dr. Bennett pointed out that while in many cases ulceration took place in the external sac, and permitted fluid secreted within the tumour to flow through the openings, and collect in the cavity of the peritoneum; in other cases the sac expanded more rapidly, and the included cysts broke into each other. Both external and internal ulcerations may occur together; but when the former do not take place, the latter are more rapid, gradually produce a less number and larger size in the secondary cysts, and at length, in the last stage of the growth, they all break down, and occasion one large cyst only. Dr. B. further stated, that if at this period in the progress of an ovarian encysted tumour, a puncture was made, or an ulcerative opening formed, whereby the contents could be discharged, and the walls of the cyst brought into contact, a permanent cure might be accomplished; and he alluded to the occasional occurrence of rupture of such cysts, and their subsequent disappearance as corroborating this statement.

In the present paper Dr. Bennett relates the following case as affording evidence of the correctness of the above pathological views:

Case.—Anne Pyper, a servant, aged 25, was admitted into the *female* clinical ward of the Royal Infirmary, Nov. 8, 1848. She had been delivered fourteen days previously of a male child in the Maternity Hospital; and, on inquiry, I find that the labour was a natural one, and presented nothing unusual. On the birth of the child, however, the abdomen still continued enlarged, and at first, led to the suspicion that another fœtus remained in the uterus. After a time the true nature of the case was rendered manifest, and a large swelling was detected, which was movable to a certain extent, and presented all the characters of an encysted tumour of the left ovary.

When I first examined her in the Infirmary, I found the abdomen swollen to about the size of a woman's during the sixth or seventh month of pregnancy. The tumour extended from the epigastrium to the pubis, but bulged considerably towards the left side. Its surface was irregular; and two large nodules, each the size of a cocoa-nut, existed about its centre. It was tense and firm to the feel, somewhat elastic, but no fluctuation could be detected. The tumour

was firmly fixed, and the seat of constant pain, especially in the left lumbar region, which was increased by pressure, by lying on the right side, or on assuming the erect posture. The urine was of a slight yellow colour, and presented its normal characters. The digestive, respiratory, circulatory, nervous, and integumentary organs appeared to be healthy. She had observed the tumour seven months before her delivery; and it has gone on gradually increasing, and been somewhat painful from the first. *Eight leeches were ordered to the most painful part of the abdomen.*

For four days the patient remained in the same condition, the local pain, however, having been relieved by the leeches. On Nov. 12, my attention was directed to the urine, which now presented a copious white deposit, occupying two-fifths of the jar, while the supernatant portion was of a light amber colour, and unusually viscid. The deposit was determined by the microscope to consist of pus, mingled with a few compound granular corpuscles. The clear portion was strongly coagulable by heat and nitric acid.

At first Dr. B. imagined that the cyst had burst into the vagina, but the patient and nurse assured me that there was no discharge between the intervals of micturition, and that all the fluid came from the bladder.

The urine presented the same characters during the next three days; the amount discharged during the twenty-four hours being about three pints. On the 15th, Dr. B. observed that the tumour had somewhat diminished in size, its hardness and tensity had disappeared, and distinct fluctuation was perceptible in it. *A broad flannel roller was ordered to be applied firmly round the abdomen, and compression made by means of pasteboard, previously soaked and modelled to the abdominal surface.*

From this time, the abdomen rapidly diminished in volume, while the amount of purulent viscous fluid discharged from the bladder varied from three to five pints in the twenty-four hours. The appetite and general health continued good; and she was ordered nutritious diet, with four ounces of wine daily. On the 23d the amount of pus contained in the urine was greatly lessened, and the clear portion presented only a slight haziness on the addition of nitric acid. On the 27th the abdomen had regained its natural size, although a dense mass, evidently the collapsed ovarian sac, could readily be distinguished, occupying the left iliac and hypochondriac regions. The urine now also was natural in quantity, and presented only a slight sediment, consisting, as shown by the microscope, of some crystals of oxalate of lime, and a few pus globules.

From this period she may be said to have recovered. She suffered occasionally from uneasy feelings on the left side, sometimes amounting to pain, which were relieved by the application of four leeches, followed by a small blister. One of the leech bites ulcerated superficially, but soon healed up. She was dismissed on the 18th of December, expressing herself as being well in every respect, having been sitting up and running about the ward for the fortnight previous. The indurated mass in the left iliac region was greatly diminished in size, but still very perceptible to the feel, though not to the eye.

The history of this case, Dr. B. conceives, can only lead to one conclusion, namely, that an ovarian encysted tumour was present on the left side; that the individual cysts had, if not altogether, at all events for the most part, broken down to form one large cavity; that the contents of this cavity had suppurated, and a fistulous opening formed either into the ureter or bladder (most probably the latter), through which the contained fluid was evacuated, permitting collapse of the sac and cure of the disease. The permanency of this cure will depend upon, whether all the secondary cysts had been ruptured and were broken down before the fistulous opening took place. This is a point which it is impossible to ascertain with certainty; but a careful examination of the woman before she left the Infirmary, convinced Dr. B. that no rounded nodules or cysts could anywhere be felt.

"Many instances are to be met with," Dr. B. remarks, "where similar cysts have burst into the peritoneum, the fluid been absorbed, and excreted in large quantities by the kidney as urine. Other cases are to be met with, where the contents of the tumour have burst externally by ulceration through the abdominal walls, or into the vagina, or into the intestines; but in none, so far as I am

aware, previous to the one now related, have the contents of the tumour been evacuated directly as a purulent viscous fluid from the bladder, proving a direct communication with that organ.

"The occasional occurrence of such spontaneous cures, has led to the proposition of producing permanent artificial openings, with a view of imitating a natural cure. Mr. Bainbrigge of Liverpool—(*Prov. Med. and Surg. Journal*, vol. iii. p. 593)—suggests making an incision into the sac, and uniting its edges with the external wound; and Dr. Tilt of London (*Lancet*, vol. ii. 1848) has lately proposed making a minute aperture by means of Vienna paste, so as to cause a permanent opening. Such practice can only be useful at a particular period in the growth of ovarian tumours—that is, when all the internal cysts have broken down into one; indeed, it is only in these cases that Dr. Tilt proposes making the aperture. But such cases are exceedingly rare, and the practice recommended can be of no real advantage until these gentlemen instruct us how to distinguish in the living subject unilocular from multilocular cysts. Numerous dissections of ovarian tumours have convinced me, that in the present state of the art this knowledge is not to be arrived at with any degree of certainty; and that consequently any proposal, however valuable in itself, which is founded upon the assumption of our possessing that knowledge, is not likely to be practically beneficial.

"Another proposition, however, has been made, which deserves consideration. In the paper formerly referred to, I remarked—"One practical rule to be followed in the treatment of these cases is, not hastily to have recourse to tapping, but by all possible means of delay to further the natural disposition, which the internal cysts exhibit under pressure, of forming one large sac." "There is every reason to suppose, that artificial pressure is capable of facilitating the absorption of the walls of the secondary cysts, and their opening into each other; but we possess no means of ascertaining when only one sac is produced. That it has succeeded in obliterating and ultimately curing the disease, however, has been proved by Mr. Isaac Brown—(see cases recorded in the *Lancet*)—whatever other opinions may be held respecting the propriety of his treatment."

"Now, the case I have read seems to me illustrative of the effects of pressure. It must be acknowledged that the seven months which had elapsed between the time the tumour was first perceptible, and the period when it spontaneously burst and collapsed, was a remarkably short one. In the most favourable cases this result takes about two years to accomplish by itself; but in the instance of Pyper, the tumour was subjected to the gradually increasing and equable pressure of the pregnant uterus, and to its influence must, I think, be attributed the fortunate result and rapid breaking down of the secondary cysts. The ulceration into the bladder was probably determined by the direction the pressure had assumed in this case, and, of course, could not be imitated artificially.

"There still remain only two methods of curing an ovarian dropsy by art—viz: by excision, and by pressure followed by puncture. The case I have narrated confirms the views suggested by pathology with regard to the *modus operandi* of the latter treatment; and if, in cases which do not admit of extirpation, pressure be so gradually and equably applied as to obliterate the internal or secondary cysts, an artificial opening then made would cure the disease. The difficulty is to ascertain when the moment for making the puncture has arrived—in other words, when a multilocular is converted into a unilocular cyst. In the present state of the art, this, as I have said, is impossible; but, as an exact indication of the difficulty is often the best preliminary to its removal, I do not despair of some day seeing it completely conquered by the cultivators of rational medicine."—*Monthly Journ. Med. Sci.*, Feb. 1849.

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30. *Treatment of Epilepsy.*—M. Delasiauve, in the concluding portion of his essay on the treatment of epilepsy, directs especial attention to the importance of hygiene, which he considers to equal, if not surpass, that of medicine in the disease. There are some practitioners, even, who look upon medicine as utterly useless in such cases, and place their sole reliance on such measures as serve

to guard the patients against the causes which induce the fits, and favour the action of such natural agents as are capable of changing the constitution. Hippocrates recommended a change of climate; and Van Swieten mentions several instances in which epileptic patients were freed from their fits all the while they remained in the East Indies. M. Delasiauve advises, when a change of climate is practicable, that a gentle, temperate climate should be selected—one but little subject to atmospheric changes; because experience has shown, in those asyla where epileptic patients are admitted, that the fits are much more frequent during extreme cold or extreme heat, and especially during continued variations of temperature. With respect to diet, the temperament, idiosyncrasy of the patient, state of the constitution, and his usual habits of living, will more or less modify it; but nevertheless it may be stated, that excess in quantity or quality, of either food or drink, will prove injurious. Every infraction of the rules of temperance will induce a relapse. More vegetable than animal food should be taken, and cooling fruits may also be used. Complete abstinence from wine is perhaps hardly necessary; but if it be drank, the wine selected should be the least stimulant, and even then only taken in moderation. Those patients who are liable to be attacked during the night, should make but a light supper, to avoid increasing the cerebral plethora, which is always greater during sleep. The necessity of maintaining the excretions must be self-evident. With respect to the insensible perspiration, cleanliness, baths, pediluvia, frictions, and warm clothing are requisite. Hard cravats and stays are decidedly injurious; and straw hats are better than the hats and caps which are in common use. The hair should be cut short; in bed, the patient should lie with his head high, to assist the circulation of the blood through the brain. Constipation should be avoided; when it occurs, it must be treated by injections and laxatives; the digestive organs should be especially attended to.

A disordered condition of the menstrual secretion is generally the cause of increased severity of the fits. The ordinary recurrence of the discharge is frequently sufficient to induce a fit, so that the attention of the practitioner should be directed to this secretion, to maintain it in a healthy state.

Continence is essentially the virtue of the epileptic; sexual intercourse produces a nervous shock, which too closely resembles the emotion which occasions the epileptic attacks, not to be attended with great danger. Those who practise onanism have, in general, the greatest number of fits. A peaceable and quiet life suits the epileptic best. Everything that tends to excite their feelings, to rouse their passions—the strong feelings of love, contradiction, and grief, inevitably add to the intensity of the disease. Their situation demands the greatest management, as they are in general very susceptible and irritable, especially just before and after a fit. Exercise is very salutary; an inactive, sedentary life, increases the morbid predisposition, and renders the consequences of the fits more deplorable. Hippocrates and Galen lay great stress on bodily exercise. Esquirol recommends gardening, horse-exercise, the gymnasium, swimming, fencing, &c. Some of these M. Delasiauve considers objectionable. M. Ferrus, on whose opinion our author evidently places great reliance, depends much on the utility of out-door work, such as agriculture and gardening. While acting as the principal physician at the Bicêtre, M. Ferrus tried this plan of treatment somewhat extensively, both with the insane and with epileptic patients. Both classes were benefited, but the latter most so. The utility of gardening is equally discoverable in private life. Of this we have in the essay before us an illustration, in the case of a gentleman subject to epileptic fits, for which medical aid was powerless, but which was entirely arrested by a journey to Switzerland, and garden-work, carried on by the patient for a series of years. Other cases are also alluded to, in which a similar result followed the having recourse to garden employment.

Horse exercise, swimming, and fencing, which, as previously mentioned, are recommended by Esquirol, are stated by M. Delasiauve to be dangerous, as are also all exertions which require too large an expenditure of strength, or a stooping posture, or in which the body is exposed to a very intense heat or light.

Variety of occupation, intermingled with amusing relaxations, will prove serviceable in cases of epilepsy. Intellectual employment requiring deep thought

is injurious. Reading, drawing, music, light composition, and the elements of chemistry, botany, physics, &c., afford great satisfaction, and sustain the moral powers, instead of exhausting them.

In his concluding remarks, M. Delasiauve recommends the establishment of institutions for the reception of epileptic patients, in order that a hygienic as well as a medical plan of treatment may be carried out, as is practised at the Bicêtre. He considers them to be absolutely indispensable.

With respect to the treatment during the fit, it resolves itself almost entirely to the prevention of bodily danger by falls or otherwise. The patient should generally be placed on his back in bed, all tight articles of clothing removed, the head a little raised by pillows, in order to diminish the determination of blood to the head, and the body placed a little on one side, in order to favour the discharge of saliva, which collects in quantity in the mouth, and might otherwise prevent the passage of air into the lungs. Some patients, when attacked during the night, have an unfortunate tendency to turn on the face, and unless carefully watched, and their position changed, may die asphyxiated. Another accident, which occurs in some instances, is the laceration, or even the amputation, of the tongue during the fit. To prevent this, a piece of wood, or a linen roll, may be placed between the teeth when the fit is coming on.

The symptoms consecutive to the attack occasionally require the attention of the medical practitioner. Generally speaking, the patient complains simply of a little fatigue, heaviness, and headache, which may be removed by rest, or by a slightly sedative or cordial infusion, with sinapised pediluvia. In the more severe cases, where the symptoms indicate congestion of the brain or lungs, the indication of practice is the abstraction of blood by large general bleedings, assisted by cupping and the application of leeches. The loss of blood is readily borne under such circumstances. Warm baths, external revulsives, sinapisms, flying blisters, &c., may also be had recourse to. The utility of refrigerant applications appears to M. Delasiauve to be problematical.—*Journal of Psychological Medicine*, from *Annales Medico-Psychologiques*.

M. Mettais, at Montrouge, strongly recommends the employment of tartarized antimony externally in frictions on the head, in cases of epilepsy. He mentions several cases in which benefit has been derived from this plan of treatment, which is not, however, a novel one, counter-irritation having been employed long since, although now much neglected.—*Gazette Médicale*.

M. Peraire, considering epilepsy to depend on a momentary cerebral congestion, proposes to cure it by obliterating the numerous arterial branches which are distributed to the pericranium by subcutaneous incisions.—*Revue Médicale*.

Dr. R. W. Evans, of Richmond, C. W., relates (*British American Journ. of Med. and Phys. Sci.*, Jan. 1849) a case of epilepsy successfully treated by an infusion of the *scutellaria geniculata*, made according to the following formula: R.—Scutellar. genic. ʒij; aq. bullientis, ℥viij: ft. infus. The mode of administration is to begin with two tablespoonfuls every eight hours, increasing the dose after the termination of a week, to double that quantity, with an occasional aperient.

The subject of Dr. Evans' case was a female, 26 years of age, who had suffered from the disease for eight years, the attacks coming on every six or seven days. The patient had taken for months, nitrate of silver, iron, zinc, strychnia, digitalis, ammoniuret of copper, valerian, musk, &c., without any benefit. Dr. Evans directed the scutellaria according to the above formula, which was continued for six weeks, when a profuse salivation took place, with a slight constriction of the fauces. The medicine was discontinued, a Seidlitz powder directed, and in a few days the ptyalism ceased. At the date of the report, Nov. 8th, the patient had been taking the medicine daily, for four months, during which she has not had a single attack. She enjoys excellent health, and her memory seems to improve daily.

Dr. E. states that he has under his care two other cases which seem to manifest the superiority of the medicine. They are, in a manner, almost recovered, with the exception of a violent palpitation of the heart at the expected period of attack, which passes off without any bad result, by the timely administration

of a few doses of tinct. digitalis, and by keeping the patient free from mental irritation, which is a frequent cause of epileptic palpitation. It is necessary to state, that in order to secure a perfect cure, the medicine ought to be continued five or six months.

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31. *Iodide of Potassium in Saturnine Affections.*—M. Melsens has transmitted to the French Academy of Sciences, a memoir on this subject. The treatment proposed by the author rests upon the principle of rendering soluble metallic substances which might otherwise remain in the system, by associating them with another substance which is readily eliminated by the organs of secretion. M. Melsens remarks, that the insoluble compounds resulting from the combination of mercurial salts and the contents of the digestive organs, dissolve in hydriodate of potass, and that the great facility with which this salt is rejected may induce a hope that the poison will also be eliminated at the same time. M. Melsens asserts, that the same solubility in hydriodate of potass exists for salts of lead. Sulphate of lead, for instance, exhibited alone to a dog, produces death in a very short time; but no accident whatever is observed if the hyd. of potass is taken together with the saturnine sulphate. In cases of mercurial palsy, related by M. Melsens, the symptoms yielded to the iod. pot., and mercury was detected in the urine during the exhibition of this drug. But as it is by facilitating the absorbtion of an insoluble substance contained in the intestine, that M. Melsens endeavours to produce its elimination, the method is not altogether without peril, and it is only in very small and gradually increasing doses that he recommends the use of the hyd. of potass.—*Med. Times*, Feb. 24.

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32. *On the external use of Iodine in Croup.*—Dr. Willige speaks of having had remarkable success in the treatment of urgent cases of croup by the external application of iodine to the larynx and trachea. He recommends that tincture of iodine should be smeared with a feather over the front part of the neck, corresponding to the larnyx and trachea and their immediate neighbourhood; and that this should be repeated several times, with intervals of about four hours, until redness and irritation of the skin is induced. In most cases this is followed by subsidence of the distress of breathing, of the spasms of the glottis, and of the other bad symptoms. He mentions the particulars of three cases in which, by this means, he succeeded in averting impending death.—*Lond. Med. Gaz.*, Jan. 1848, from *Schmidt's Jahrbücher*, No. 7, 1847.

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33. *Spigelia Marylandica in Pruritus Ani depending upon Ascarides.*—Dr. Koreff gives two cases of rebellious itching of the anus, which yielded to this treatment after the fruitless employment of the usual remedies. The root is the only part of the plant which possesses the required virtue, the leaves being perfectly inert. The formula employed was as follows:—℞.—Radicis spigeliæ dr. iss; mannæ oz. j. To be infused in a pint of boiling water. Dose, a cupful three times a day, for three days. A concentrated decoction of the root may at the same time be used as an enema.—*Revue Médico-Chirurgicale*, Sept. 1848.

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34. *Lemon Juice in Rheumatic Gout.*—Dr. Owen Rees narrates the case of a girl, aged 18, suffering from rheumatic gout in all her joints, who was treated successfully by lemon juice, in the dose of half an ounce three times a day. In his remarks on the case, he states that he has in many other cases seen marked and rapid relief from the same plan. He first had recourse to lemon juice from a belief that vegetable acids, from the large quantity of oxygen they contain, contribute to effect the transformation of the tissues generally, and moreover, from the idea that the supercitrate contained in the juice, by its transformation contributed to the alkalinity of the blood.—*Med. Gaz.*, Jan. 26, 1849.

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35. *Employment of Nux Vomica in the Diarrhœa of Exhaustion.*—Dr. Nevins mentioned, at the meeting of the Liverpool Medical and Pathological Society, the benefit derived from the employment of nux vomica in the treatment of the diarrhœa from exhaustion, chiefly observed in pauper patients, and especially children. In these cases he had repeatedly found no benefit from astringents

and ordinary tonics, but the patients had rapidly improved under the use of the following prescription:—Alcoholic extract of nux vomica (not officinal, but prepared by most wholesale druggists), gr. ss; rhubarb, gr. ss; saccharated carbonate of iron, gr. j; blue pill, gr. ss.; opium, gr. $\frac{1}{8}$, made into a pill, and taken three times daily. In many cases he omitted the opium altogether.

He attributed the benefit to the influence of the nux vomica, which by stimulating the nervous energy of the bowels, enabled the lacteals to absorb the nutriment from the food, and the large intestines to retain the fæces; whilst, at the same time, the iron acted as a permanent tonic; and the very small doses of rhubarb and blue pill improved the character of the secretions, without acting as an aperient. Improvement was generally perceptible in a few days, and he seldom had occasion to continue the prescription more than a fortnight.

Mr. Taylor, of the Liverpool workhouse, confirmed this account from his experience of many cases in the same class of patients in whom he had tried it, on Dr. Nevins's recommendation.—*Lond. Med. Gaz.*, Dec. 1848.

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36. *Beneficial Effects of Coffee in Infantile Cholera.*—Dr. Pickford states, that from the great importance which now attaches to the treatment of cholera, he feels it to be incumbent upon him to impart to others the experience which recent opportunities have afforded him of the effects of *coffee* in the cholera of infants.

In the case of an infant at the breast, to which he was called late, to whom the usual remedies had been administered unavailingly for four days, the exhibition of coffee was attended with complete success. The incessant vomiting and purging had produced extreme emaciation; the abdomen was distended; the pulse was frequent and small; there was great restlessness, and sleeping with the eyes half opened; convulsive motions of the eyes when awake. Carbonate of ammonia, with nourishing diet, and external stimulants, having been fruitlessly exhibited, Dr. Pickford determined to have recourse to coffee, which he knew to have been recommended as a stimulating tonic, by Dr. Dewees. He began with a small dose, a scruple, infused in two ounces of water, with one ounce of syrup, giving a large spoonful every hour. The effect was surprising; the vomiting was arrested; the evacuations became more consistent, improved in colour, and less frequent. The amendment progressed so rapidly, that by the tenth day the child was discharged as cured.

The effects were equally good in a little girl, fourteen weeks old, in whom the vomiting was not so severe, but the diarrhœa was quite as copious. In this case, also, the coffee was given, after other means had been tried, and the patient greatly reduced.

Dr. Pickford has since used this remedy in nine children of different ages, from four weeks to two years and a half. The doses have varied from half a scruple to two scruples daily. He has, also, administered it to children labouring under premonitory symptoms, especially where the evacuations have been very light-coloured. In some cases a single dose of calomel has preceded its employment. The effect was always favourable, except in one case to which he was called too late, when the child was already sinking.

He has not had any occasion to try the value of coffee in the diarrhœa of adults, having found calomel and opium of sufficient efficacy.

The benefit of coffee, especially in bilious diarrhœa, has been extolled by Lauzow and Chultze (Richter's Arzneimittellehre, vol. 1). West, in 1813, found a combination of coffee and opium very useful in the epidemic of that year. Coffee has long been employed by the common people as a remedy (in Germany, we suppose), after excessive indulgence in spirit drinking. It is known to have the property of promoting digestion, and the action of the bowels.

The purgative action of burnt coffee, is attributed by Dr. Pickford to its tonic exciting properties. Like some other substances, in small doses it is capable of restraining diarrhœa, while in large doses it acts as a cathartic. The physiological explanation of this opposite effect of the same remedy is probably to be found in the condition of the motor nerves, which, being weakened, are by its moderate stimulus restored to their normal state of excitement, and thereby

diarrhœa depending on their paralysis is cured. In this way, also, is explained its aperient action in larger doses on adults, by its over-stimulating these nerves, and so promoting increased movement of the intestines.—*Lond. Med. Gaz.*, Nov. 1848, from *Henle's Zeitschrift*, vol. vii., part 1.

37. *Palsy of the Tongue cured by galvano-puncture.*—In 1813, an old woman, Rosa Ponti, was seized with general palsy of sensation and motion, in consequence of fright. Of this she was cured, except in the arms, head, and tongue. She could not articulate a word. In 1836, twenty-three years afterwards, Dr. Dacamina had recourse to galvano-puncture—one pole of the apparatus being applied to the occipital nerve by means of a needle introduced into the neck, and the other to the tip of the tongue. After two applications the patient could raise the organ, and after the third, she could reply to some questions intelligibly, although with difficulty. After this the points of contact were varied, and the electricity applied to different parts. The patient gradually recovered her speech, and the other palsied parts were also cured.—*Psychological Journ.*, Jan. 1849, from *Filiatre Sebezio.*

38. *On the Injection of various substances into the Veins.* By Dr. Manzolini and Quaglino of Milan.—The municipality of Milan having placed at the authors' disposal a large number of stray dogs, they took the opportunity of injecting various substances into the veins; as pus of various descriptions, blood abstracted for different diseases, and a variety of putrefying animal substances. They then experimented with a variety of poisonous and medicinal agents, as arsenic, corrosive sublimate, iodine, digitalis, quinine, &c. The following are the principal conclusions:

1. *Pus*, whether syphilitic, variolous, or tubercular, does not induce corresponding specific affections in the organism of brutes, but constantly determines a gastro-enteritis and enlargement of the mesenteric glands. 2. Recent blood, though abstracted from patients with fever, small-pox, &c., exerts no effect on the health of animals. 3. The inorganic irritating poisons exert their action on the alimentary canal, inducing generally a gastro-enteritis. 4. This predilection for the intestinal tube seems to be due to the facility with which it becomes an eliminatory organ, by reason of its vast superficies and its easy communication with the exterior. 5. The action excited by pus transported into the circulation explains the colliquative diarrhœa and other gastro-enteric disturbances which individuals suffering from large and old suppurating wounds, open cancer, phthisis, empyema, phlebitis, and gangrenous typhus are liable to. 6. Putrefying substances exert the same effects upon the canal as the irritant poisons. 7. Gastro-enteritis is not met with in those animals which die soon after the injection of these bodies. 8. All poisonous substances, organic and inorganic, whether introduced into the circulation by the veins, or by the digestive apparatus, constantly effect an alteration in the crasis of the blood. 9. That these poisons may exert their action upon the nervous system, it is requisite they should be transported into the circulatory current, the affection of the nervous centres being only secondary; in fact, when the stomach has been deprived of the influence of the par vagum by section, the same results are obtained as when this is uninterfered with. 10. *Vegetable poisonous substances* and their alkaloids, however, attack the nervous system in preference to the digestive tube. Some especially affect the brain, as opium; others the cerebellum and medulla spinalis, as the ethers; and others the medulla spinalis alone, as strychnia, quinine, *lolium tomulentum*, &c. 11. Two substances acting upon the same portion of the nervous system, but producing phenomena peculiar to each, when they are given simultaneously, do not confound their actions, but simultaneously manifest their proper phenomena. Thus by giving strychnia to a dog labouring under the tremors produced by *lolium tomulentum*, we engraft upon these the tetanic spasms peculiar to the alkaloid. 12. The venous and arterial tree is always found normal, whatever be the substance injected by the veins or administered by the mouth. 13. The remedies known as the narcotics and narcotico-acrids of authors (as aconite, belladonna) never induce gastro-enteritis, however introduced. 14. Dilatation of the pupil may be induced by

remedies which act on the encephalon, as well as by those which act on the medulla spinalis. In the first case, it is due to the torpor which the narcotic substances produce in the nerves of the third pair destined for the motion of the circular fibres of the iris, by which these antagonize the radiated fibres receiving their motor power from the cervical nerves. In the second case, the midriasis depends upon the spasm or excess of excitement of these last nerves. —*Brit. & For. Med.-Chir. Rev.*, from *Gaz. Med. di Milano*, No. 46, 1847.

SURGICAL PATHOLOGY AND THERAPEUTICS AND OPERATIVE SURGERY.

39. *Hospital Gangrene.*—Mr. GUTHRIE terminates a very interesting lecture on Hospital Gangrene, with the following conclusions:—

1st. Hospital gangrene never occurs in isolated cases of wounds.

2d. It originates only in badly-ventilated hospitals crowded with wounded men, among and around whom cleanliness has not been too well observed.

3d. It is a morbid poison remarkably contagious, and is infectious through the medium of the atmosphere applied to the wound or ulcer.

4th. It is possibly infectious, acting constitutionally, and producing great derangement of the system at large, although it has not been satisfactorily proved that the constitutional affection is capable of giving rise to local disease, such as an ulcer; but if an ulcer should occur from accidental or constitutional causes, it is always influenced by it when in its concentrated form.

5th. The application of the contagious matter gives rise to a similar local disease, resembling and capable of propagating itself, and is generally *followed* by constitutional symptoms.

6th. In crowded hospitals the constitutional symptoms have been sometimes observed to precede, and frequently to accompany, the appearance of the local disease.

7th. The local disease attacks the cellular membrane principally, and is readily propagated along it, laying bare the muscular, arterial, nervous, and other structures, which soon yield to its destructive properties.

8th. The sloughing of the arteries is rarely attended by healthy inflammation, filling up their canals by fibrine, or by that gangrenous inflammation which attends on mortification from ordinary causes, and alike obliterates their cavities. The separation of the dead parts is therefore accompanied by hemorrhage, which in large arteries is usually fatal.

9th. The operation of placing a ligature on the artery at a distance, or near the seat of mischief, does not succeed, from the incision being soon attacked with disease, unless it has been arrested in the individual part first affected, and the patient has been separated from all others affected by it.

10th. The local disease is to be arrested by the application of the actual or potential cautery. An iron heated red-hot, or the mineral acids pure, or a solution of arsenic or of the chloride of zinc, or other caustic which shall penetrate the sloughing parts, and destroy a thin layer of the unaffected part beneath them.

11th. After the diseased parts have been destroyed by the actual or potential cautery, they cease in a great measure to be contagious, and the disease incurs less chance of being propagated to persons having open wounds or ulcerated surfaces. A number of wounded thus treated are less likely to disseminate the disease than one person in whom constitutional treatment alone has been tried.

12. The pain and constitutional symptoms occasioned by the disease, and considered as distinct from these symptoms which may be dependent on disease endemic in the country, are all relieved, and sometimes entirely removed, by the destruction of the diseased surface; which must, however, be carefully and accurately followed to whatever distance and into whatever parts it may extend, if the salutary effect of the remedies is to be obtained.

13th. On the separation of the sloughs, the ulcerated surfaces are to be

treated according to the ordinary principles of surgery. They cease to eliminate the contagious principle, and do not require a specific treatment.

14th. The constitutional or febrile symptoms, whenever or whatever time they occur, are to be treated according to the nature of the fever they are supposed to represent, and especially by emetics, purgatives, and the early abstraction of blood if purely inflammatory, and by less vigorous means if the fever prevailing in the country is of a different character.

15th. The essential preventive remedies are separation, cleanliness, and exposure to the open air—the first steps towards that cure which cauterization will afterwards in general accomplish.—*Lancet*, Dec. 30, 1849.

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40. *Pathological Researches into the Diseases of the Ear.* By JOSEPH TOYNBEE, F.R.S. (Proceedings of Royal Med.-Chirurg. Soc., Feb. 15.)—This paper contains the results of 915 dissections, which are classified as follows:—

Ears of persons known to be deaf	184
Ears of persons supposed to be deaf	70
Ears in the stage of incipient deafness	358
Ears in a healthy state	303
Total	915

After some introductory observations, the author enters upon an examination of the state of each of the structures composing the organ of hearing. The most frequent pathological condition of the membrana tympani consists in a thickening of its internal and middle layers, the deposit in its substance of calcareous matter, its adhesion with or without the presence of membranous bands to the inner wall of the tympanic cavity, and the destruction of more or less of its substance by ulceration. In the tympanic cavity, the diseases most frequently present are, a thickened state of the mucous membrane, membranous bands which connect together the ossicula, deposits of mucous, purulent, scrofulous, and calcareous matter. Anchylosis of the stapes to the fenestra ovalis occurred in twenty-six instances. One of the interesting results of these dissections is the rarity of disease in the Eustachian tube; in the 612 dissections of diseased ears, only twenty-one disclosed traces of disease in that portion of the organ of hearing. The author pointed out the agreement that exists between the diseased condition described, and the history and symptoms of deaf patients during life, and expressed his conviction that when rational plans of treatment, founded upon pathological research, are fully carried out by intelligent medical men, this branch of surgery will be rescued from the uncertainty which at present attaches to it. The author concluded his paper by pointing out the intimate connection which exists between different parts of the organ of hearing and the brain, its membranes and other important organs.

Mr. TOYNBEE, at the conclusion of his paper, was questioned by a great number of the fellows on various points connected with disease of the ear. It will not be necessary to give the questions and answers in detail, but the subjoined epitome of the answers will convey the entire meaning of the author of the paper.

1. The treatment of chronic inflammation and thickening of the mucous membrane lining the tympanic cavity consists in the use of leeches, followed by an ointment, composed of a drachm of powdered cantharides to an ounce of simple ointment, or of the tincture of iodine, below the ears, and as near to the tube as possible. To the outer half or two-thirds of the external meatus a solution of nitrate of silver is to be applied every third or fourth day; the salt is to be dissolved in water, and its strength may vary from half a drachm to a drachm of the salt to an ounce of water. In some cases, the surface of the membrana tympani is to be washed with a weak solution of the nitrate of silver, from four to six grains to an ounce of water. Where the mucous membrane of the fauces is thick or relaxed, astringent applications should be made. Small doses of blue pill, the bichloride of mercury, or mercury with chalk, should be administered, not with the object of producing salivation, or any depression of the system, but to aid the local applications in promoting absorption. Warm bath-

ing, exercise in the open air, the avoidance of wine and stimulants, and of close and warm rooms, should be strictly enjoined. Under this treatment, cases of deafness, of many years' standing, have been cured or relieved.

2. Catheterism of the Eustachian tube is an operation very rarely called for; in nine cases out of ten, by means of the otoscope,* air is distinctly heard to enter the tympanic cavity, or there are other unequivocal symptoms indicative of the pervious state of this tube;† practical experience with the deaf quite agrees with the result of the dissections of the Eustachian tube.

3. Besides the otoscope, in order to arrive at something like an accurate diagnosis of the nature of ear diseases, it is requisite to use a small lamp and a delicate silver speculum. By means of the two latter instruments the exact state of the meatus and membrana tympani can be ascertained. It will be observed that the latter structure is not unfrequently more concave than natural, a condition which is produced either by direct adhesion of the membrana tympani to the inner wall of the tympanum, or through the agency of membranous bands, or by a contraction of the tensor tympani muscle.

5. The principal disease observed in the fenestra rotunda consists in the presence over it of a distinct false membrane, which is attached to the margins of the fossa fenestræ rotundæ; the latter fossa is often completely filled up by the thickened mucous membrane of the tympanum.

6. Many deaf persons, as in the case of one of the patients in whom there was found to be complete anchylosis of the stapes to the fenestra ovalis, hear musical sounds when sonorous vibration can be made to act upon the nervous expansion, as through the medium of solids.

7. My experience has not been sufficient to indicate by the kind of deafness the particular part of the ear affected.

8. As a rule, I have not found the fluids of the labyrinth deficient in old persons, but the mucous membrane of the tympanum and the membrana tympani have been the seat of the disease.

9. Some deaf persons hear better in a noise, as in a carriage, than when quiet, because the fluid of the vestibule is thrown thereby into a state of undulation, and in this state can receive the vibrations of the thickened membrane of the fenestra rotunda, which are much less powerful than is natural; indeed, supposing the views on the physiology of the tympanum advanced by Mr. Brooke to be correct, and thus far all my researches tend to establish their accuracy, in those cases where the stapes is so firmly fixed as not to be able to press upon the labyrinthous fluids, and give them a certain state of tensity, the vibration produced by a carriage or by a loud sound would in some measure be a compensation.

10. In some deaf persons there is an over-sensibility of the nerves of the ear, and a loud sound or a loud voice aggravates the malady by causing a forcible contraction of the muscles of the internal ear, and a rigid state of the membrana tympani.

11. Tinnitus aurium is probably dependent upon the constant compression of the contents of the vestibule, and by the pressure inwards of the stapes by means of rigid bands of adhesion, thickened base of the stapes, &c.

12. There are cases where loud reports produce a rupture of the membrana tympani; others, in which the hearing becomes gradually dulled, as in the right ear of sportsmen. I have not been able to dissect any cases tending to elucidate the pathological condition.—*Lancet*, Feb. 24.

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41. *Ovarian Dropsy.*—Dr. E. J. Tilt concludes an interesting series of papers in the *Lancet*, with the following practical deductions:

1. That small and moderate-sized tumours may be cured by preparations of

* An elastic tube, twenty inches in length, each end being tipped with ebony, one extremity is introduced into the external ear of the patient, the other into that of the surgeon, while the former attempts to make a forcible expiration with closed nostrils.

† Although the air is heard to enter the tympanic cavity, it does so with the production of a variety of sounds, as a puffing, bubbling, and cracking, according to the condition of the mucous membrane of the tympanum.

iodine given in large doses internally, as well as externally, the contents of the cysts being re-absorbed by the walls of the cyst, as in the cases seen by Dr. Rayer and Madame Boivin, or else voided per rectum, or per vaginam, as in many recorded cases.

2. That tapping per abdomen, if employed as a palliative, and without any view towards the radical cure of the patient, should be deferred as long as possible, modern statistics having confirmed Morgagni's opinion of the danger of this operation.

3. That when the cyst is voluminous, and felt bulging in the vagina, there is a sufficient number of successful cases to countenance the puncture of the cyst per vaginam, an India-rubber sound being left in the cavity of the cyst, and moderate pressure being made to the abdomen.

4. That the rupture of the monolocular ovarian cysts, with the effusion of their contents into the peritoneal cavity, instead of being attended (as is even now generally supposed) by the most alarming symptoms of peritonitis, is, generally speaking, unaccompanied by any alarming symptom whatever, thus warranting the subcutanean incision of the cyst—an operation which has been successfully performed.*

5. That the ulcerative opening of the cyst, after adhesion of its walls to the abdominal parietes, (the new plan of treatment I propose in certain cases of ovarian dropsy,) is supported alike by the complete success by which it has been followed, in the case I have recorded, and by the success attending a somewhat similar plan of treatment in hydatid cysts of the liver.

6. That ovariotomy should be reserved for cases of *multilocular ovarian cysts*, and those *monolocular cysts where there is a considerable amount of solid deposit*, unless, from their diminutive size, or the absence of symptoms, they do not menace the patient's life by their rapid increase.

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42. *Aneurism of the Axillary Artery.* By Henry Hancock, Esq. (*Proceedings Royal Med.-Chirurg. Soc.*, Jan. 23d, 1849.)—The subject of this disease was a bargeman, aged thirty-four, who was admitted into the Charing-cross Hospital in August last. The tumour presented all the ordinary characteristics of aneurism, and occupied the entire axilla, raising the pectoral muscles and clavicle. He assigned as the cause of the mischief the falling of a sack of beans upon him two years before. He was bled on admission, and a week afterwards the author placed a ligature on the subclavian artery, external to the scalenus muscle. The case went on favourably for a fortnight, when the tumour showed signs of inflammation. At the end of three weeks, the ligature came away from the artery, six days after which the sac, which had suppurated, burst. Another opening was made lower down, which allowed the escape of a large quantity of offensive blood and matter. The wound made at the operation was then nearly healed. From this time he appeared to be going on well for ten days, when suddenly a gush of blood took place from the sac, and he expired in about three-quarters of an hour afterwards. A careful dissection was made of the parts, and the axillary artery was found healthy, except where it communicated with the sac. The divided ends of the artery were each closed by adhesive inflammation, and a plug of coagulum of about half an inch in length. Six branches were found proceeding from the artery between the part on which the ligature was applied and the opening in the side of the artery into the sac. From one or more of the largest of these, it is the opinion of the author that the fatal hemorrhage took place, the blood being thus brought backwards into the artery above the opening into the sac, and its impulse forcing out the coagulum which

* In addition to the cases published in the table annexed to one of my former papers, others have been reported to me by Mr. Lane, and several other professional friends. I have now forty-one cases of spontaneous rupture of ovarian cysts. In twenty-four, we have every reason to believe that radical cure took place; in six, the patient was thought cured for a time varying from a few months to several years, (this radical or temporary cure being almost always unattended by any alarming symptoms.) In eleven cases, this accident was followed by death. The proportion of fatal cases to cure is as eleven to twenty-four, or rather, eleven to thirty-one—something more than one in three.

was interposed. The author makes some observations on the importance of the sac in all cases of aneurism, and introduces a statistical account of the result of operations for the cure of traumatic and idiopathic axillary aneurism, in confirmation of his impression that the ligature should be placed on the axillary artery itself, "in all cases where the mischief can be traced to a direct injury, and where the size of the tumour admits of our reaching this vessel;" the risk of hemorrhage would, he considers, be thus materially diminished, if not altogether obviated, in case of the sac suppurating, as in the present instance.—*Lancet*, Feb. 3.

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43. *Ligature of Subclavian followed by Incessant Cough.*—Mr. B. Cooper states (*Proceedings of Royal Med. and Chirurg. Soc.*, Jan. 23, 1849) that he secured the subclavian external to the scalenus in a thin subject. The operation offered no difficulties whatever, but immediately the vessel was secured, the patient was seized with a constant and continued short cough, which went on until he died. On examination, the phrenic nerve was found to be uninjured, but highly inflamed, as was its neurilemma. He said that unsuccessful cases were often more instructive than successful ones.—*Lancet*, Feb. 3.

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44. *Inguinal Aneurism—Ligature of the left external Iliac Artery.*—Dr. Willis records (*Lancet*, Feb. 10th, 1849) the case of a negro, 29 years of age, admitted into the hospital at Havana with an aneurism of the external iliac immediately beneath Poupart's ligament on the left side. The tumour had made its appearance about a year previously, and at the period of his admission in hospital the circumference of the base of the tumour was 18 inches. A ligature was applied to the artery by Dr. Castro on the 10th of April. On the 15th of May the ligature came away. There was fluctuation in the tumour. A free incision was made into the sac, and about two pounds of fetid coagulated blood let out. The patient put upon full diet, tonics, &c. The sac healed by the 31st of May, and on the 19th June the patient was discharged, and went to work with the perfect use of the limb.

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45. *Femoral Aneurism—Compression tried without success—Amputation.*—J. Tufnell, Esq., has communicated to the Surgical Society of Ireland (*Dublin Med. Press*, Dec. 20th, 1848) a case of femoral aneurism, which, after having been treated by compression without success, amputation was resorted to. The case is important, inasmuch as it was found on examining the amputated limb, that the nature of the accident precluded the possibility of cure by compression, and showed also that the operation of tying the vessel would have been equally unsuccessful. The artery had been torn across, its ends widely separated, and the sac of the aneurism fed by a full current from below, so that no solidification of its contents could have been brought about, and amputation of the limb was the only means of preserving life. Its immediate adoption was the unanimous opinion of all present at the consultation, the correctness of this opinion being subsequently verified by the condition of the limb, if, instead of amputation, a ligature had been placed upon the external iliac artery, gangrene would have most assuredly followed, and the life of the man been lost.

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46. *Wound of the Right Kidney successfully treated.* By M. Blandin.—A young man, aged twenty, received a poignard wound in the back, in the right subcostal or renal region. He was carried to the Hotel Dieu, complaining of intense pain in the right side, extending forwards towards the iliac fossa, and back towards the wound; he passed blood in micturating, and there was great general anxiety. The wound, which was horizontal, was scarcely two centimetres in length, and appeared to correspond to the anatomical region of the kidney. The position of the wound, together with the bloody urine, led M. Blandin to diagnose a wound of the kidney. The patient was bled largely, and kept perfectly quiet in the horizontal position in bed, and put on low diet. For two days after his entrance into the hospital, the urine continued bloody, but less so than at the first; the venesection was nevertheless repeated three times. On the third day, the bloody urine had disappeared, the patient was free from

fever, and desired food. The small wound, however, still continues open externally, and the low diet and perfect rest are continued; but the absence of fever or other accident, and the cessation of the hæmaturia and pain, give reason to hope that the patient will soon be completely cured. Meanwhile M. Blandin keeps him in the hospital under surveillance, in case of secondary accidents resulting from the injury.—*Annales de Thérapeutique*, September and October 1848, p. 246.

At the time the above observation was reported, the patient was considered by M. Blandin to be almost cured; but, since this, unexpected accidents have supervened, and it is our duty to follow up this rare and interesting case. The patient continued much in the same state as reported in our last, and his convalescence was almost completed, when, owing to excess in eating and walking, he was seized with a sudden return of his former symptoms, namely, abundant hæmaturia, violent bilious vomiting, pains in the wounded renal region, with swelling in that part and in the shoulder, and general anxiety and fever. There seemed to be no affection of the peritoneum, nor of the intestines. These symptoms lasted for some days, in spite of the repeated application of large numbers of leeches and of baths. The violence of the symptoms was assuaged by these means; but a few days later the same causes reproduced the same effects, which were combated by similar measures. At present—about a month from the time of the infliction of the injury, and a few days after the third return of the morbid phenomena—the patient, having lost an enormous quantity of blood by the urinary passages, and also by the general and local bleedings, is feeble, pale, and exsanguinated, like persons who have suffered from severe hemorrhages. M. Blandin keeps him in bed, restricts him to a moderate diet, and causes him to continue the baths. He thinks justly that the same symptoms may return, and perhaps compromise the life of the patient. We will notice the final termination of this case; for it is one of a class of cases which are of rare occurrence and of great interest.—*Monthly Retrospect*, from *Annales de Thérapeutique*, Oct. and Nov. 1848.

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47. *Lateral Transfixture of the Chest by a Scythe Blade, followed by complete recovery.* By E. Q. Sewell, M. D., (*British American Journ.*, Feb. 1849.)—The subject of this extraordinary case was a youth 18 years of age, who had been mowing, and had taken the scythe off the handle, and was carrying it home to have it sharpened. Whilst walking, he happened to step on a log, when his foot slipped, and he fell on the scythe blade, the point of which entered under the right axilla, between the third and fourth ribs, passed horizontally through the chest, and came out through the corresponding ribs of the opposite side, making a small opening. The wound on the right side was about two and a half to three inches long, that on the left, about one inch. The poor lad lay still, until his brother, who was with him, with admirable presence of mind, drew the scythe slowly out, observing with much caution as he did so, the curvature of the blade. The effusion of blood was not excessive, and the patient walked home with his brother's assistance. There was, it is said, no spitting of blood. The patient entirely recovered.

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48. *On the Employment of Sugar of Lead in Strangulated Hernia.* By Drs. Neuhold and Hasserbronc.—The use of sugar of lead enemata for reduction of strangulated hernia, was first recommended by Neuber and Seitl; it has recently been tried by Drs. Neuhold and Hasserbronc. Dr. N. affirms that operations would become very rare where this agent more extensively used: he states that in his experience of its effects, he has always met with success, and that he has given four to six enemata, each containing ten grains, of the acetate of lead, without bad results. In a case of a very large scrotal hernia, which had resisted the taxis, and all other means for twenty-eight hours, and the patient refusing to consent to an operation, ten grains of the acetate of lead dissolved in six ounces of tepid water were given as an enema, and this was to be repeated every two hours. The pulse, which was small and contracted, gradually became more developed, the general condition hourly improved, and the hernia spontaneously returned while the man was asleep. In another case of

inguinal hernia, Dr. N. was not called till strangulation had lasted three days, and had given rise to the worst symptoms. The patient's condition improved much after the use of the enema, and the hernia readily yielded to the taxis.

Dr. Hasserbrone has tried it, and with complete success; the following are the circumstances of the case:—In the month of September, 1848, Dr. H. was called to visit Michael Th——, a basket-maker, about sixty years old, to reduce a large inguinal hernia of the right side. The patient had already made several ineffectual attempts to reduce it, but he only rendered the tumour more painful. Constipation was present, hiccough, and strong agitation. Dr. H. tried the taxis, emollient enemata, cold applications to the tumour, and other usual means, without success: the strangulation had already lasted thirty-six hours. He was going to request a consultation for the purpose of advising an operation; before doing so, however, he determined to try sugar of lead enemata, forty grains to twenty-four ozs. of warm water for four enemata; two every two hours; at the same time he ordered cold applications of strong sugar of lead to the tumour: after the third enema Dr. H. again tried the taxis, and was able to reduce the hernia. He ordered immediately an ounce and a half of castor oil; the patient had several stools during the night without suffering any bad effects: two days after he resumed his usual business. Though not altogether sharing in M. Neuhold's hopes, Dr. H. believes this remedy will play an important part in the treatment of strangulated hernia, and that it will advantageously supplant tobacco enemata, which are not free from danger.—*Month. Retrospect*, Feb., from *L'Union Médicale*, Nov. 30, 1848.

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49. *New Method of Treating Urethral Pains following Gonorrhœa.*—M. Vidal (de Cassis) having frequently remarked that these pains were relieved by pressing the penis with the fingers, has been led to try compression for their treatment, and has found it useful, affording a perfect cure in many cases, and a marked alleviation in others. The operative procedure, says M. Vidal, is so simple that it is scarcely necessary to mention it. "The surgeon takes a long strip of diachylon plaster, one centimeter (two-fifths of an inch) in breadth, and rolls it around the penis in the same manner as a common bandage, beginning at the glans; or, still better, he may apply it more accurately by using a number of small strips of plaster, each of which shall only be sufficient to encircle the organ once, and the two extremities of each strip should be made to cross upon the urethra, for the purpose of insuring the firmness of the dressing. The principal point to be attended to is the degree of compression, which ought to be as firm as possible, without interfering with micturition, which would, of course, necessitate the removal of the dressings. The compression should be continued for a considerable period after the cessation of the pains, to prevent their return." M. Vidal cites two cases, from amongst great numbers which he has treated, in favour of this mode of practice.—*Ibid.*, from *L'Union Médicale*, Oct. 7, 1848.

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50. *Luxation of the Astragalus inwards; Reduction.* By MM. Thevenot and Boyer.—On the 8th of September, the patient, a heavy person, was thrown from his horse, and, when he endeavoured to rise, found that he could not stand on the right foot. He was seen soon afterwards, when the limb was found to be in the following condition. The anterior part of the foot formed a right angle with the leg, and there was neither shortening of it nor of the heel, but the whole foot had been forced outwards, so that its axis, instead of being continuous with that of the leg, was about an inch external to it. The fibula was entire, and below the external malleolus there was found a large cavity, into which the integuments could be pushed to a considerable depth; this cavity was bounded inferiorly by the superior aspect of the os calcis, which could be easily felt. The tibia was uninjured, but below the internal malleolus, a large hard polished surface was felt lying immediately under the skin. This surface was evidently the articular pulley of the astragalus, and in front of it the depression formed by the neck of that bone was felt. The malleolus rested firmly upon the external aspect of the astragalus, which had become superior. The skin at

this part was much stretched and discoloured by the pressure, but not perforated.

The day after the accident, the patient having been put under the influence of chloroform, M. Boyer endeavoured to reduce the dislocation. Two assistants made extension of the heel, whilst other two maintained a counter-extension of the thigh, the leg being half flexed, with its inner aspect looking upwards. Considerable lengthening having been thus affected, he tried to push back the astragalus. The bone was easily forced into the place made by the extension, but it retained its wrong direction, and the displacement recurred as soon as the extension was lessened. Several such attempts having failed, M. Boyer, whilst the limb was being extended, pushed upon the external margin of the foot with his knee, so as to cause forcible abduction of it, and at the same time pressed with both thumbs on the superior border of the astragalus. The displaced bone was thus turned round, and resumed its right position with a loud crack, the deformity completely disappeared, and the foot could be moved without causing pain. No unfavourable symptoms occurred: the patient gradually recovered the use of the limb, and he can now walk with ease.—*Monthly Retrospect*, Jan. 1848, from *L'Union Médicale*.

51. *Vertical Dislocation of the Patella.*—Dr. Mendoza, in his Surgical Statistics of the Hospital of Barcelona, during the year 1847, reports an interesting case of vertical dislocation of the left patella, in which the internal edge of this bone was engaged in the depression between the condyles of the femur, and the external edge had become the interior edge, and the anterior face had become the internal face, whilst the external face had become the posterior face. Great efforts were made to replace the patella in its natural posture, but in vain; and only a slight alteration was produced in the position of the bone. The patient was then placed under the influence of chloroform, and, upon a rapid and forcible flexure of the leg, the patella regained its natural position with an audible noise. The internal condyle of the femur had, in this case, performed the part of Guyat and Wolff's apparatus.—*Med. Times*, Dec. 16.

52. *Excision of the Os Calcis.*—Mr. T. M. Greenhow related to the Newcastle and Gateshead Pathological Society, (Nov. 13, 1848,) two cases of excision of the os calcis, which operation, he conceived, has an advantage over the operations of Mr. Wakley and others, inasmuch as it left the patient the free use of the ankle-joint.

The first case was that of a pitman, who was admitted into the infirmary, June 15, with an abscess discharging from the left heel, and the adjacent tissues indurated and swollen. It was stated by the patient, that eight weeks previously, a nail had accidentally been thrust into the affected part. There was likewise a distinct sense of fluctuation below the outer mallelous. The foot could be flexed on the leg without causing pain. On introducing a probe, the bone was found exposed and carious: rested ill. Ordered poultices, and twelve grains of Dover's powder every night.

For a period of two months he continued in the same state as on admission, and there being little prospect of amendment, it was determined to remove the diseased os calcis, which operation was accordingly performed on the 15th August, in the following manner:—

First, an incision was made at the internal malleolus, and carried to the centre of the heel, where it communicated with a like incision, extending from the external ankle. A third passed transversely across the sole of the foot, to join the two former. Each malleolar flap was then formed by continuing the incisions along the external and internal margins of the foot. The flaps were dissected back, the tendo Achilles divided, and the knife being introduced between the astragalus and os calcis, the bone was forcibly disarticulated and dissected out.

On the 22d, the report stated that sloughing of the flaps had occurred, with swelling and redness of the integument on the back of the leg. An abscess formed in the calf a few days afterwards, and was opened. From this period he continued to amend in every respect, the abscess having gradually closed

up, the tendency to slough in the seat of operation ceased, and the wound cicatrized favourably.

The second case was also that of a pitman, aged 29, who was admitted into the hospital August 10th, 1848, with disease of the left foot, affecting principally the os calcis, which can be felt in a carious state by a probe introduced through several fistulous apertures.

The disease was stated to have commenced two years and a half previously, with spontaneous inflammation and subsequent abscess. For this disease he was under surgical treatment in this hospital some months ago, and some portions of diseased os calcis were then removed.

On the 15th August, another portion of diseased bone was removed, the patient being under the influence of chloroform. He continued to progress favourably after the operation, up to September 3d, by which period the incisions had nearly healed. The foot then became inflamed and tender, accompanied with œdema of the extremity as far as the knee. Considerable sympathetic fever likewise supervened.

The report of the 5th stated that the febrile symptoms had somewhat abated, but the inflammation had extended up to the knee. On the 8th, the erysipelas was principally confined to the foot, attended with œdema, and a greater lividity of the integument. An incision was made along the dorsum of the foot. From this period the inflammation gradually declined, and the wounds healed up, with the exception of several fistulous apertures on each side of the foot, through which the bone (os calcis) was felt extensively diseased.

On October 17th, removal of the diseased os calcis was determined on, and the operation was accordingly performed, in a similar manner to the preceding case.

The report of November 10th stated that the wounds had almost healed up, and that the deformity was not very great.

In the first case the patient retains the use of the ankle-joint, and is already capable of bearing considerably on the affected limb.—*Lond. Med. Gaz.*, Dec. 1848.

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53. *Excision of the head of the Femur in Morbus Coxarius.*—In a clinical lecture recently delivered by Professor Syme on morbus coxarius, he reprobated, we think very properly, the operations lately performed for the cure of this disease.

"Lately," he observed, "in some of the London hospitals, it has been attempted to cure the disease by removing the carious head of the femur; but this is improper, as caries of the joint never exists without the bones of the pelvis being equally involved. I regret that these operations should have been attempted, as they tend to throw discredit on the excision of other joints, such as the elbow, where the practice is eminently useful, and which has now become an established operation in surgery. If the disease admits of recovery, excision of the head of the thigh-bone is superfluous and useless. If it does not admit of recovery, cutting out the head of the thigh-bone can only hasten the fatal termination. If the patient recovers after the head of the bone has been cut out, it is a distinct evidence of the uselessness of having excised it. If caries is curable, why amputate the head of the bone? If incurable, why remove the head of the bone, and, at the same time, leave behind carious portions in the acetabulum, which cannot be removed?

"Common sense and their unsuccessful results will, no doubt, ultimately show the impropriety of such operations."—*Med. Times*, Dec. 30, 1848.

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54. *A new mode of removing Nævi.*—J. C. Christophers describes (*Lond. Med. Gaz.*, Dec. 1848) a method of applying a simple ligature to strangulate and remove nævi, which, he says, he has employed in six cases, and in all with perfect success, and without any untoward accident occurring. His method is as follows:—

1st stage.—Take a piece of strong silk, well waxed, about half a yard long, and dip the moiety of it in ink to dye it, the more readily to distinguish the ends after it is divided; thread a needle with the same, leaving the ends equal,

and pass it under the centre of the part to be removed. This done, cut the ligature in the middle, leaving the needle attached to the inferior or black half of the ligature; take the same and pass it through the skin, immediately below the part to be strangulated. Thread the needle with the superior or white half of the ligature, and pass it through the skin in an opposite direction to the black ligature, immediately above the part to be strangulated. Remove the needle.

2d stage. Tie tightly the two ends of the black loop that includes the inferior half of the nævus. Tie in the same manner the two ends of the white loop that includes the superior half of the nævus. The four ends remaining, two black and two white, are now to be tied alternately and tightly, the one to the other, and the operation is completed. The whole mass to be removed is by this means completely and entirely enclosed in a double circle, both from within and without, and is most effectually and permanently strangulated. The pain, he says, of this operation is trifling.

OPHTHALMOLOGY.

55. *Case of Cysticercus Cellulosa in the Anterior Chamber of the Human Eye.* By Wm. Mackenzie, M.D., Surgeon-Oculist in Ordinary, in Scotland, to the Queen.—(*Proceedings of the Royal Med.-Chirurg. Soc.*, Nov. 28, 1848.) E. G., aged 16, applied at the Glasgow Eye Infirmary, in September 1848, on account of obscurity of vision in the left eye. On examination, a spherical body, about one-eighth of an inch in diameter, was discovered lying close in front of the pupil, in the anterior chamber, and this proved, on closer inspection, to be a cysticercus cellulosa. The patient stated, that in June the left eye had been the subject of acute inflammation, which occurred immediately before the appearance of the hydatid. Objects placed in a direct line before the eye or below it, she saw very indistinctly, but in a moderate light the expansion of the pupil left one-third, at its upper part, unobscured. The position of the hydatid varied to a certain extent, and was an object of curiosity to many. Its opaque body, its tail, vesicle, and rostellum, together with its four lateral suckers, could be distinctly made out, and it was observed to be most lively in the morning and when the patient was warm. She was quite unconscious of the motions of the hydatid, and did not appear to suffer pain from its presence. On October 14th, the foreign body was removed by the following operation:—The patient was placed on her back, and the eyelids being retracted, a puncture was made with Beer's pyramidal knife, at the temporal edge of the cornea, to the extent of $\frac{2}{10}$ths of an inch. Schlagintweit's hook was then introduced, and the hydatid was seized and easily withdrawn. The iris protruded a little through the wound, but was readily reduced by friction, through the medium of the upper eyelid. Not a single bad symptom followed, and the patient was dismissed quite well in a week. The hydatid was placed in tepid water, and continued to move for fully forty minutes after its removal from the eye. Viewed through a compound microscope, the transparent corona of claws surrounding the rostellum were distinctly seen, as were the corpuscles scattered over its neck, and the four lateral suckers. The author states it as his opinion that the attack of ophthalmia in June, immediately preceding the appearance of the hydatid, was owing to the development of its ovum in one of the blood-vessels of the iris or choroid, and that the inflammation ceased suddenly as soon as the hydatid dropped into the anterior chamber, where it lived at its ease, and throve on the aqueous humour. He then proceeded to make some remarks on other cases recorded, and to state his reasons for not trying any application to the eye with a view of killing the hydatid, which he considered likely to irritate the organ; and even if effective, an exciting cause of inflammation would still be left. He did not apply belladonna, fearing that the cysticercus, as occurred in Neumann's cases, might fall into the pupil and irritate the iris. A further delay in operating he considered unjustifiable, on account of the risk which it involved of inflammation being excited and the eye being sacrificed.—*Lond. Med. Gaz.*, Dec. 1848.

56. *Case of Foreign Body in the Eye.* By James Dixon, F. R. C. S. E., Surgeon to the London Ophthalmic Hospital.—The following case of expulsion of a foreign body, which had remained *eight years* in the anterior chamber of the eye, shows that the formation of a fibrinous cyst around such fragments of metal, does not ensure the patient against the recurrence of inflammation, and enforces the propriety of immediately removing them whenever it can be done without serious injury to the organ.*

P. G., aged 35, a shoemaker, slenderly built, and of pale, unhealthy complexion, came to the London Ophthalmic Hospital, January 10, 1848, complaining of intolerance of light, pain, and impaired vision, in the right eye. The cornea was clear; the sclerotic presented a vascular zone; the iris moved sluggishly when exposed to the light; the pupil was drawn a little downwards and inwards. On the lower and inner part of the iris, midway between its ciliary attachment and the edge of the pupil, lay a small, rounded mass, the size of a mustard-seed, which seemed to be a foreign body, thinly coated with fibrin. The patient could still see large letters, but within three days had been able to read small print, with this eye. He stated, that eight years ago, the eye was struck (he supposed with a shot) as he stood a few yards distant from a man who was shooting sparrows. Pain and redness of the eye came on, and he consulted a medical man, who gave him medicine which made his mouth sore. The sight was not much affected at this time, and it remained good and useful—almost as good as that of the other eye—for about three years. Inflammation then returned, and he applied a second time for medical aid; mercury was administered, and at the end of a fortnight he was so much better, that he discontinued his attendance. No further inconvenience was felt until the beginning of the present year. On his first visit to the hospital, he was leeched and purged, and then calomel was ordered night and morning, with opium. Within three days the foreign body was more than half denuded of its fibrinous covering, and proved to be a thin, flat scale, like a fragment of a percussion cap. A fresh deposit of fibrin soon took place, and until the end of June inflammation continued, with varying intensity, but the foreign body was never sufficiently free from fibrin to allow of its being extracted without a risk of injuring the lens, which remained perfectly healthy. During February, fresh deposits of fibrin occasionally took place, and were absorbed again: by the middle of March the fibrinous effusion on the hinder face of the cornea was so extensive as to hide the lower half of the pupil, and fine red vessels were seen passing into this fibrin.

On the 10th of April, a little white elevation, with a dark dot in the centre, appeared in the middle of the fibrinous patch on the cornea, as if the substance of the latter were softening, and about to give way. Three days later a fine black point protruded; it was readily seized, and a minute scale of metal extracted, which, on being tested, proved to be copper. No escape of aqueous humour followed its removal, as it had become completely enclosed by fibrin, which formed a barrier behind, at the same time that absorption of the cornea was going on in front.

June 5. A dense opacity hides the inner half of the pupil, and, except a slight adhesion of the iris, is the only morbid result of the injury. The iris is active, the lens perfectly transparent, and vision good.—*Dublin Quarterly Journal*, Aug. 1848.

MIDWIFERY.

57. *On the Causes of the Endemic Puerperal Fever of Vienna.* By C. H. F. Routh, M. D.—(*Proceedings of Royal Med.-Chirurg. Soc.*, Nov. 28, 1848.) There are three lying-in departments in the General Hospital of Vienna. To one of these strangers are not admitted. Of the two others, to which only the author's

* The late Mr. Walker observed, that copper was "a substance incapable of solution within the eye."—*Oculist's Vade Mecum*, 1843, p. 325.

remarks refer, one is destined for the instruction of medical men and midwives, the other for the instruction of midwives only. The average number of deliveries in each department is from 250 to 300 per month. The mortality in the division for midwives and medical men has generally been thirty per month, and has occasionally been seventy. In the division for midwives only, the number of deaths has generally been from seven to nine per month. The clinical instruction is conducted on precisely the same general plan in the two departments; but the medical men receive also practical instruction in a private course, in which the operations are performed on the dead body of some female, while the midwives receive this instruction by means of the leather phantom. The frightful mortality in the division to which medical men are admitted, became the subject of a government inquiry, and the number of students in attendance was reduced from forty to about thirty. The mortality, however, remained the same as before. On inquiry, it was found that in other countries, where there were two divisions in the lying-in hospitals, one for midwives, and another for medical men, the mortality was far greater in the latter. The author shows that this difference could not depend on the manipulations of male attendants being more rough than those of midwives, nor to the influence of contagion or infection. He adopts the explanation proposed by Dr. Semelweiss, the assistant-physician of that division of the Vienna Lying-in Hospital, in which the great mortality has occurred—namely, that the real cause of the mortality from puerperal fever there, was the "uncleanliness of medical men and students in attendance;" their hands being impregnated with cadaveric matter through dissecting, making autopsies, and performing obstetric operations on dead bodies. Dr. Semelweiss recommended all students attending his division of the lying-in hospital, not to handle the dead matter, or, if they did so, forbade them making any examination of the patients till the following day. And he directed every student to wash his hands in a solution of chlorine prior to, and after every examination made on the living subject. The result was, that the number of deaths was reduced from thirty per month to seven per month, the usual average mortality of the division for midwives only. The author makes some remarks on the modes in which the cadaveric matter may be introduced from the hand of the medical attendant into the system of the woman. He then describes the characters of the puerperal disease so fatal in the Vienna Hospital, with the view of demonstrating its resemblance to the effects of a poisoned dissection wound; and he concludes by recapitulating the inferences which he believes to be justified by the facts stated in his paper.

Dr. Webster regarded the paper as a very valuable one, but thought that the author had not attributed sufficient influence to the situation of Vienna, in the production of the large amount of mortality by puerperal fever in that city. It was well known that Vienna was the most unhealthy place in Europe. Fever of a low type was very prevalent there. The hospital was situated in a damp position, and was ill-ventilated and unclean. The students, also, were anything but cleanly. The mortality announced in the paper was truly frightful. The same objection as to situation also held good with respect to Strasburgh and Prague, in both which cities the hospitals were on the banks of a river.

Dr. E. Murphy said that the novel point in the paper was the fact established by the author, that puerperal fever was propagated by the students who had been recently examining dead bodies. The facts brought forward in the paper he (Dr. Murphy) thought proved that the above mode of contagion prevailed. In his own experience in the Dublin Lying-in Hospital, he had found attention to ventilation and cleanliness the best preventive of the disease. When Dr. Collins was appointed master of that institution, the puerperal fever was at its height. He had tried every means to eradicate it. The perseverance in improved ventilation, the use of chloroform, &c., succeeded; the disease gradually subsided, and for the last four years there had been no case of puerperal fever in that institution. He referred to the case of a German student, who was constantly at post-mortem examinations, both within and without the house. Puerperal fever seemed to attend him wherever he went; but, on his giving up his pursuit after dead bodies, the fever subsided.—*Lond. Med. Gaz.*, Dec. 1848.

58. *Influence of the Mother's Imagination upon the Production of Monstrous Children.* By Dr. Burdon.—It is a fact, that the workings of a strongly excited mind may produce very great changes in the body, either immediate or remote; but it may at the same time be observed, that this power of the mind is circumscribed within a limited circle, even within its own body. It may be felt in the several tissues, glands, and viscera; it may produce sympathetic irritations and nervous movements; but it has no constructive or creative power. Who, by an effort of his mind, could place another hair on his head, or add a cubit to his stature?

In forgetfulness of this and common sense, and only noticing the fact, that the mind of one individual cannot alter the body of another, it is asserted, that the little being within the womb cannot be considered as a foreign body with respect to the mother, but rather (in consideration of its connections) as a part of herself.

Dr. William Hunter examined very patiently the influence of the mother's imagination upon her still unborn child, and proceeded upon this right plan of investigation. In 2000 cases of labour, immediately on delivery, and before examining the child, he inquired of the woman whether, during her pregnancy, she had a longing for, or had been frightened by, or her thoughts had dwelt on, anything particular for any length of time? He questioned her also as to her own ideas on the subject, as to whether she expected to find a mark on the child; if so, what kind, and why? All her answers were taken down in writing, and then he examined the child. He declares that though he found many children marked, yet in not one single instance of these two thousand did the answers or expectations of the woman agree with the result. Many expected a mark where there was none; and others had not thought of the subject, and had got through their term unnoted by any incidence when there was. Both the St. Hilaires, father and son, have been very assiduous in collecting the particulars of every recorded abnormal birth; and the latter asserts, as I have mentioned further back, that Dr. Martin's case is the only authentic one in which the woman said before her confinement that her child should be born marked, and her feelings proved to be correct. Thus it is clear how the numbers of instances have been collected to form such a large mass of evidence as proof of the truth of our subject. But when closely examined, the magnitude of this mass fades into insignificance. Remove the ample folds of its gossip drapery, and the giant becomes a dwarf. As I have myself mentioned a number of cases of monstrosities, in which the impression was made on the mind of the mother prior to the birth of the child, do I mean to deny the existence of cause and effect? Certainly not. Let us examine what constitutes the logical term, cause and effect. It is this: A certain act being always, or nearly so, followed by the same consequences. If occasionally the primary being present, the succeeding phenomenon does not appear, we readily admit that in such instances the usual cause is overpowered by some other cause. But be it remembered, that the exceptions must be few in comparison with the rule. Is such the case with the subject before us? No such thing. Every woman, I repeat, during her gestation of nine months, must have had her attention arrested by some object, or must have been struck by some one idea more forcibly or more frequently than by others, and yet, comparatively speaking, there are but very few children born with a blemish. How, then, are these facts to be explained which have occurred? I answer, the agreement between them is merely accidental, and cannot be looked upon as cause and effect. Every person has been struck by meeting with a number of remarkable fortuitous coincidences. If these were collected and set in a note-book, they should far outnumber those which take place between mother and child.—*Month. Retrospect*, Feb., from *Dub. Med. Press*, Nov. 29, 1848.

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59. *Ulceration of the Os and Cervix Uteri treated with Solution of Gun-Cotton.*—In an interesting paper on this affection in the *Dublin Medical Press* (Oct. 4th, 1848) Dr. T. R. Mitchell observes, that the *rationale* of treatment in these cases consists in applying a remedy which will form an artificial covering to the ulcer, and permit of the healing process to go on underneath. The application gene-

rally employed is nitrate of silver, either solid or in solution, applied through the speculum to the part. Persons who have extensively used this remedy are aware that it sometimes acts as a caustic as well as by forming an eschar, and that its caustic power is sometimes too great. How often has it happened to me to find acute symptoms arise when I only desired a protective power to be exerted. Reasoning upon the *modus curandi* of this remedy, it struck me that if I could apply an artificial coating to the ulcer which would not possess any irritating properties, that a great point would be gained in the treatment of these distressing affections. Having proved the value of gun cotton solution in various cases of external lesions, I thought it would be of use in those under consideration. I have now given it a fair and impartial trial, and have no hesitation in recommending it as a most useful remedy.

The following is the method I have adopted in its application:—The patient being placed upon her left side, and the speculum introduced, the ulcerated surface is to be wiped dry with a succession of pieces of soft lint, until all adherent mucus is removed; a camel's-hair pencil dipped in the solution is then to be rapidly applied to the ulcerated surface, and allowed to dry, which will occupy a couple of minutes—a second, third, and fourth coating, if necessary, can thus be applied; the first coating is followed by a slight burning sensation caused by the ether, followed by a sensation of coldness from its evaporation. The application requires to be renewed at the end of forty-eight hours, as the secretion collects underneath the varnish, and detaches it. In cases of simple abrasions three dressings have proved successful: in more obstinate cases, and where large granulations have been present, I have used nitrate of silver, acid nitrate of mercury, and potassa fusa first, and then applied a varnish of the gun-cotton over the eschar, and have succeeded in curing extensive ulcers of the cock's-comb variety in half the time I have been able to succeed without the solution.

In cases of vaginitis without ulceration, I have found the painting of the walls of the vagina with the solution most beneficial. The difficulty, however, is to dry it well, which requires time and trouble, but in my mind the result amply repays both, the friction of the surfaces is prevented, and the amount of suffering, pain and inflammation consequently much diminished.

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60. *On the Statistics, Pathology, and Treatment of Puerperal Insanity.*—Dr. Webster read a highly interesting paper on this subject before the Westminster Medical Society (Nov. 18, 1848), in which he gave several elaborate statements respecting the frequency of puerperal insanity compared with other varieties of mental disease. To illustrate this point, he stated, that in 1091 curable female patients recently attacked by insanity, and admitted into Bethlem Hospital, during the last six years, 131, or one-eighth of the whole were puerperal cases; thus showing that the malady is not so unfrequent as many may perhaps believe. Again, as to the curability of this form of mania, more recoveries were reported than in the other varieties of lunacy; 81 puerperal patients having been cured, or at the rate of 61.83 per cent.; whereas the average recoveries during the last twenty years, in all cases of insane females treated at this institution, was 53.67 per hundred. Hence, three in every five cases of puerperal insanity may be confidently expected to get well within a year. In regard to hereditary tendency to mental disease, 51 of the 131 patients were so predisposed, or 39 per cent.; whilst 41 were suicidal, being at the rate of 31 in every 100. Both these peculiarities are of much importance in this malady, and materially influence the disease, its progress, and result. The total deaths in the 131 puerperal patients amounted to six, or four and a half per cent., thus making the average rate of mortality nearly the same as in other species of insanity, taken collectively. The particulars of the fatal cases, and pathology, next occupied attention, and he (Dr. Webster) stated, that three of the six patients who died were suicidal and hereditary; one was only hereditarily predisposed to insanity, but not suicidal; whilst two, it was reported, had neither of these peculiarities; and none were insane previously. In addition to these facts, Dr. Webster also mentioned, that half the deaths occurred in patients who were not affected longer than fifteen days, the shortest period being eleven days, and all were attacked by insanity

within seventeen days after their confinement. In none of the dissections were any morbid appearances observed in the abdomen, but the lungs always appeared diseased, as also the brain and membranes. The details of one autopsy were then described, as a specimen of the diseased changes of structure frequently met with in puerperal mania, the principal morbid alterations being, turgidity of the blood-vessels of the brain and membranes; large, bloody points on cutting the cerebral substance; slight serous infiltration of the pia mater, and considerable effusion of fluid in the fifth ventricle: adhesion and purulent ulceration were noticed in the left lung, with hepatization in other portions of that organ, and in the right lung partial pneumonia in the congestive stage. Although this patient had been delivered only twenty-six days prior to her death, no corpus luteum could be discovered in either ovary, nor any diseased changes of structure in the abdomen. Notwithstanding it appeared rather a digression, the author, in his paper, remarked, that gangrene of the lungs, however rare an occurrence in persons carried off by bodily disease, but without any mental affection, sloughing of that organ was not unfrequent in lunatics. He said so from his own knowledge, and others had also made similar observations, especially in continental asylums for the insane. Dr. Webster afterwards alluded to the treatment of puerperal insanity; and considering cerebral irritation, combined with great exhaustion of the nervous system generally to constitute the true character of this disease, and that it rarely, if ever, proves inflammatory, he thought depletion, or the use of strong antiphlogistic remedies, became very seldom admissible. Leeches appeared in some cases advisable, but even then should be applied with great caution, and their effects carefully watched. As a general maxim, the author advised the same principles to be followed in the treatment of this malady as in delirium tremens, since the nature of the two diseases was somewhat analogous. Opium, camphor, ammonia, and aromatics, with some of the diffusible stimuli, proved excellent remedies, and ought to be chiefly relied upon. When opium fails to procure sleep—so beneficial in this as indeed in every form of insanity—then conium, hyoscyamus, or Indian hemp, may be substituted. Mild purgatives, to open the bowels, and sometimes cathartics, should be prescribed; but powerful drastic medicines are seldom advisable. Enemata also are useful, and sometimes with turpentine. When the disease assumes a more chronic form, setons or issues may be made in the neck, &c. The shower-bath, from its strengthening influence, then acts beneficially, whilst tonic remedies, with more nutritious food, become necessary, and prove advantageous; indeed, low diet is very often prejudicial in insane patients, and it has been long remarked in many asylums, that improved nutriment, especially in lunatics who have previously suffered privations, frequently becomes a powerful means for promoting recovery. In recent cases of puerperal insanity, when the circulation is accelerated, accompanied by evident congestion of the brain, leeches to the temples and behind the ears, or blisters, might then be applied, and afterwards cooling lotions, with ice to the head; whilst tartar emetic, or ipecacuanha, in nauseating doses, and digitalis, may be administered for the same object. Besides mental treatment, moral means, with judicious occupations and amusements, when proper for the patient, must not be overlooked, as these very often constitute aperitive adjuncts in the management of the insane. With the view of briefly illustrating the symptoms and treatment proper to pursue under ordinary circumstances, the author next narrated two cases of puerperal insanity, one being affected with mania, the other with melancholia. In the first, or maniacal case, the patient, a single woman, aged 21, whose child did not survive, had hereditary tendency to mental disease, but was reported not suicidal. She was very noisy, incoherent, often much excited, frequently very wild, violent, exceedingly mischievous, used bad language, destroyed her clothes, and paid no regard to personal cleanliness. Took food voraciously, was very restless at night, and dirty in bed. Pulse generally quick, aud bowels constipated. The remedies employed consisted of opening medicines, cooling saline mixtures, and croton oil, on one occasion, with regulated diet. Subsequently, bodily occupation and amusements were put in requisition, whereby the patient soon became convalescent. The second case was an example of the

variety denominated melancholia. In this patient, a married women, age 30, suicidal and hereditary tendency to mania existed. She was hasty in temper, but naturally cheerful. The attack commenced a month after delivery, and her child was weaned when six weeks old. Had been much debilitated by hemorrhage after labour; appeared often very depressed; melancholia; generally very desponding of her insane state, and had attempted to injure herself. She took food very unwillingly; could not sleep at night; would scarcely remain in bed, and endeavoured to escape from her room. Pulse of natural frequency, and bowels regular. Early in the disease leeches were once applied to the temples, and afterwards blisters to the nape on three occasions. Opiates and camphor were prescribed, with purgatives, especially the compound decoction of aloes. Latterly, the cold shower-bath and tonic medicines were employed. The diet, at first light, was subsequently more nutritious, with malt liquor, by which means, and proper occupation conjoined, as the patient improved, with amusements, she recovered. In concluding his paper, of which the above report is merely an abstract, the author made a few observations respecting the employment of restraint to persons labouring under lunacy in any form. Dr. Webster is decidedly opposed to the use of such severe measures; and said, if improper in ordinary cases of mania, mechanical coercion was even more inapplicable to puerperal insanity; and whenever the straight-waistcoat is adopted lest the patient might injure herself—the excuse commonly assigned by attendants—the exasperation and excitement then exhibited appear more frequently a consequence of, than a warrant for, such barbarous proceedings. This is found to be especially true in respect of suicidal patients; since experience amply demonstrates that the mechanical restraint of insane persons so disposed, and even of individuals who have never shown any propensity of the kind, often acts as a highly exciting cause of suicide. The degradation which even lunatics feel, when thus treated like criminals, frequently produces most injurious effects upon the weakened mind of the sufferer, and if the insane patient subjected to such cruel treatment be a female of delicate constitution, susceptible feelings, high accomplishments, and of education, the objections to straight-waistcoats, or similar means, become much stronger, as the results, in all likelihood, will prove more disastrous.

Dr. MURPHY was of opinion that the antiphlogistic treatment, in cases of puerperal insanity, was very dangerous. He had found opium, where nervous power was deficient, a valuable stimulant. Cases which occur during lactation he considered very fatal. He briefly alluded to puerperal fever being sometimes mistaken for this disease. Puerperal insanity, he stated, was rarely seen in lying-in hospitals, one case in 1000 being about the average to the women delivered in the Dublin Lying-in Hospital. He concluded his remarks by asking Dr. Webster whether he considered that lactation favoured the development of this disease?—*Lond. Med. Gaz.*, Dec. 1848.

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61. *In what Cases (other than of Contracted Pelvis) is it proper to induce Abortion or Premature Labour?*—Professor PAUL DUBOIS, in the lectures, of which we propose to give an abstract, confines himself to those cases where the safety of the mother is in question, not regarding in any respect whether the child is viable or not. This absolute abandonment of the interests of the infant, when the life of the mother is seriously endangered, although a principle not admitted by many accoucheurs, now finds less and less opposition every day. M. Dubois lays down the following propositions:—

Pregnancy introduces into the economy numerous physiological and anatomical changes:—

Among these changes some are constant; as the expansion of the uterus, and the vascular development of this organ.

Others are variable; such as the phenomena arising from sympathy between the uterus and other organs.

These changes are generally confined within limits compatible with the general health:—

Sometimes they exceed these limits, and give rise to morbid affections more

or less serious, and such that the only resource for the mother's safety is to bring on labour.

Independently of the affections alluded to above, there are other diseases which may develop themselves during pregnancy, and, in addition, be aggravated by the mere co-existence along with them of that state. This aggravation may arise from mechanical conditions, or by way of sympathy, and may render necessary the induction of labour.

A case of severe bronchitis during pregnancy lately occurred in M. Dubois' clinique, where he had resolved to induce premature labour. But a favourable and sudden change took place in the disease, and rendered this operation unnecessary.

The following additional propositions are laid down by M. Dubois:—

1. Premature labour is more certainly indicated and induced with more chance of success, according as the morbid states for which it is resorted to as a cure, are more closely connected with the pregnancy, and the necessary concomitant conditions of that state.

2. Further, success is more probable according as the circumstances indicating the operation are likely to disappear on the cessation of pregnancy.

3. It is necessary that the operative procedure be simple, and such as adds no additional danger to that which already exists.

From these propositions we may deduce the following consequences:—That artificial labour will succeed best in those maladies aggravated chiefly by the mechanical changes in the uterus; whilst, on the other hand, the chances of success will be less when the operation is performed for an intercurrent disease. Further, those cases arising from, and depending upon, simply mechanical causes, will be more likely to be benefitted than those arising from sympathetic changes.

The first mechanical condition requiring the operation, is *excessive dilatation of the uterus by superabundance of liquor amnii.* In illustration, a case occurring in the practice of M. Duclos (see *Bulletin de la Faculté*, tom. vi. p. 222) is cited, where artificially-induced labour evidently saved the mother's life. Another interesting case is mentioned, where M. Stoltz had resolved to resort to the same plan under circumstances of the greatest urgency, but nature had completed the work before his arrival at the patient. The waters had flown off, and complete delivery restored the woman to comparative health.

The second set of cases sometimes demanding the operation, are those where, in addition to the pregnant uterus, *the abdomen contains a large tumour.* Thirdly, cases where, from *malconformation of the pelvis and trunk*, there is not sufficient space for the uterus to develop itself. We may remark, however, that in these last sets of cases, premature labour generally comes on spontaneously.

Fourthly, cases of *retroversion of the uterus*, in which it becomes impacted in the small pelvis.

Fifthly, those cases of *uterine hemorrhage*, where nothing but the evacuation of the ovum, and the contraction of the uterus, will stop the bleeding.

We now come to another series of cases demanding the operation; and firstly, we mention those nervous diseases which may demand it when they exist to an excessive and dangerous degree, as *chorea, convulsions*, &c. But M. Dubois inculcates extreme caution in such cases, as also in cases of *obstinate vomiting* during pregnancy. Two cases are mentioned in which *cholera* supervened upon pregnancy; in one labour was induced, in the other it came on spontaneously; both women recovered.

There is another series of cases sometimes demanding the operation; namely, where there exists chronic disease, very much aggravated by the mechanical distension of the uterus, as *diseases of the heart, of the aorta, asthma*, &c.

Again, it has been proposed to bring on labour in cases where the child has been previously found to *die at some regular time*, before the completion of the ninth month. But this ought to be done only when the infant is still alive and viable, and even then it should be resorted to with reserve, as there may be hope that the disease which caused the death of the child in a former pregnancy, may have now disappeared.—*L'Union Médicale*, November and October 1848.

62. *Cause of Hemorrhage in the latter Months of Pregnancy in Cases of Placenta Prævia.* By Dr. Scanzoni.—Ever since the time of Levret the occurrence of unavoidable hemorrhage during the three last months of pregnancy has been ascribed to the development and disappearance of the cervix uteri from above downwards—in other words, to the dilatation of the internal orifice of the neck of the womb. This theory Dr. Scanzoni considers far from being proved. He believes that, in advanced pregnancy, the external, and not the internal, orifice of the neck of the womb becomes dilated and expanded over the lower surface, as it were, of the womb itself, and that the internal orifice, composed of contractile tissue, remains undeveloped, and forming the single opening into the cavity of the organ. These remarks may be easily verified in the case of a primipara, or where the nabothian follicles are well developed. In such cases the lips of the lower orifice of the cervix uteri may be seen or felt at some distance from the os, and expanded around it in the form of a circle.

Further, Dr. Scanzoni remarks that, during the first six months of utero-gestation, it is the upper half of the womb which is chiefly or almost exclusively developed, in order to enclose the enlarging ovum; that it is during these same six months that the mass of the placenta becomes most rapidly increased in size, and, consequently, that when inserted, as is usually the case, upon the lateral walls of the uterine cavity, it grows consentaneously with these walls. But, on the other hand, during the three last months of pregnancy, the lower half of the uterus expands very rapidly. The uterus, which, up till the sixth month, was pyriform in shape, now becomes ovoid. And, if the placenta, having attained nearly its full development during the first six months, finds itself implanted over or near the cervix, which is developed during the last three months, then its vessels are liable to be put on the stretch and ruptured, by the disproportionate growth of that part of the uterus on which it is inserted, and hence the hemorrhagy.—*Monthly Retrospect*, Jan. 1849, from *L'Union Médicale*, Nov. 21, 1848.

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63. *Cerebral and Meningeal Phlebitis in Puerperal Women.*—M. Ducrest, who has published an essay on the occurrence of cerebral and meningeal phlebitis in puerperal women, states that the disease is met with but rarely. When it is met with, however, it constitutes a very dangerous complication of the puerperal state. Encephalic phlebitis presents all the characters which belong to the anatomical lesions observed in the phlebitis of other organs, that is to say, it is adhesive or suppurative. In the first case, we find, in the calibre of the cerebral vessels, a firm clot adhering to the vascular parietes; in the second, pus is found in the veins and in the cerebral mass, either infiltrated, or in the form of abscesses; the extent, seat, and number, may vary. As the result of these lesions, or occurring at the same time, we may note other secondary alterations, such as meningitis, meningo-encephalitis, hemorrhage, and ramollissement. In all cases there were purulent collections elsewhere besides the brain, that is, in the uterus, lungs, &c. It is worthy of notice, that cerebral phlebitis principally attacks tuberculous subjects; M. Ducrest looks upon it as a secondary disease, a consecutive phlebitis.

The symptoms described by M. Ducrest are chiefly those which are indicative of cerebral mischief; they are not diagnostic of the disease in question. They are —more or less intense headache, delirium of a variable character and duration, preceded or followed in some cases by a sort of obtuseness or torpor of the intellect; convulsions, trembling of the muscles of the limbs and face; eclampsia, palsy, generally partial and incomplete; contraction, generally backwards, even to convulsions; numbness of the limbs; feeling of burning and weight in the eyes, irregular dilatation of the pupils, &c. These symptoms are neither constant nor diagnostic; nor are they certain data for the prognosis and treatment of the disease. M. Ducrest nevertheless concludes, that the occurrence of all or of the greater part of these symptoms indicates an organic affection of the brain, whatever it may be, which consequently ought to attract the attention of the practitioner; that it should be treated according to the strength of the patient, and the therapeutic rules which guide the treatment in acute diseases of the brain; and lastly, that, as there are stages in the progress of encephalic

phlebitis, a prompt and active treatment should be adopted in the early part of the disease, to prevent its passing into the suppurative stage.—*Journ. Psychol., Med.* Jan. 1849, from *Archives Générales de Méd.*

CHOLERA.

64. *Chemical Examination of the Liquid Vomited during Cholera.* By Alfred S. Taylor, F.R.S.—The specimen which was submitted to examination was delivered to me by Mr. Kite, medical superintendent of the Tooting Asylum for pauper children, with the following account of the case:—"The fluid was the matter vomited by a child, nine years of age, who was suddenly taken ill while at school, at 11 A.M., on the 3d of January. The first symptom was diarrhœa, followed by vomiting of the undigested food, the child having had breakfast between seven and eight o'clock—*i. e.* more than three hours before the first attack of vomiting; she had not complained of diarrhœa previously. The breakfast consisted of a mixture of gruel and arrow-root, with bread. After the first vomiting the extremities became cold, and the pulse weak and feeble. The vomiting and diarrhœa continued, the former the more constant, and collapse became complete. She complained of pain at the epigastrium, but there were no cramps; the tongue was furred, and the matter vomited assumed the appearance of rice-water; the dejections were likened by the nurses to soapy water. The fluid brought to you was thrown up very soon after the first vomiting, when the undigested food was rejected; it was in fact the production of the second vomiting, and immediately poured from the vessel into the bottle. The usual remedies were adopted—calomel, ammonia, opium, stimulants, and warmth externally, but without effect. The case proved fatal at 1 P.M. on the 5th of January, fifty hours from the appearance of the first symptoms."

The *liquid* was turbid, and when shaken appeared like dirty water. When left at repose, a sediment of a curdy-looking insoluble white substance subsided. There were no distinct traces of food, with the exception of a few husks resembling those of barley undigested. Iodine water gave no blue colour either with the sediment or the clear liquid. There was no indication of the presence of blood. The white deposit had the appearance of pus, and had none of the ropiness of mucus. The supernatant liquid had the colour of very pale or diluted serum. Its specific gravity was found to be 1·012. One hundred grains submitted to evaporation at a gentle heat on a sand bath, yielded 3.3 grains of solid extract, resembling a layer of brown varnish. This residue yielded by incineration 0.8 grs. of saline matter, almost entirely soluble in water. The only alkali detected in the aqueous solution of the ash, was soda. This solution had a slightly alkaline reaction (alkaline carbonate), and was abundantly precipitated by nitrate of silver, the precipitate being insoluble in nitric acid. A salt of baryta gave a very slight precipitate (sulphate of baryta). There was no trace of a soluble phosphate, nor could any insoluble phosphate (of lime) be detected in the residue. The ash, therefore, consisted of chloride of sodium, sulphate of soda, and carbonate of soda, the first-mentioned salt forming not less than three-fourths of the whole.

The clear serous liquid was without remarkable odour, and had a slightly acid reaction. It became very frothy by agitation. A portion was boiled, without any coagulum, or even turbidity, being produced. It remained equally unchanged on the addition of strong nitric acid, and no opacity was caused by ferrocyanide of potassium and acetic acid. Alcohol and pyrophosphoric acid produced in it no change. It was therefore obvious that the liquid contained no albumen. Acetic acid did not produce in it any change: casein and mucus, in a soluble or diffused form, were therefore absent. Muriatic acid was added to it, and it was allowed to stand for a few hours, but there was no change indicative of the presence of the colouring principle of bile; and nitric acid did not indicate the presence of this secretion. A slip of white paper plunged into it and dried did not present any yellow tint. When a small quantity was boiled with pure caustic potash holding dissolved, oxide of lead, it became perceptibly

62. *Cause of Hemorrhage in the latter Months of Pregnancy in Cases of Placenta Prævia.* By Dr. Scanzoni.—Ever since the time of Levret the occurrence of unavoidable hemorrhage during the three last months of pregnancy has been ascribed to the development and disappearance of the cervix uteri from above downwards—in other words, to the dilatation of the internal orifice of the neck of the womb. This theory Dr. Scanzoni considers far from being proved. He believes that, in advanced pregnancy, the external, and not the internal, orifice of the neck of the womb becomes dilated and expanded over the lower surface, as it were, of the womb itself, and that the internal orifice, composed of contractile tissue, remains undeveloped, and forming the single opening into the cavity of the organ. These remarks may be easily verified in the case of a primipara, or where the nabothian follicles are well developed. In such cases the lips of the lower orifice of the cervix uteri may be seen or felt at some distance from the os, and expanded around it in the form of a circle.

Further, Dr. Scanzoni remarks that, during the first six months of utero-gestation, it is the upper half of the womb which is chiefly or almost exclusively developed, in order to enclose the enlarging ovum; that it is during these same six months that the mass of the placenta becomes most rapidly increased in size, and, consequently, that when inserted, as is usually the case, upon the lateral walls of the uterine cavity, it grows consentaneously with these walls. But, on the other hand, during the three last months of pregnancy, the lower half of the uterus expands very rapidly. The uterus, which, up till the sixth month, was pyriform in shape, now becomes ovoid. And, if the placenta, having attained nearly its full development during the first six months, finds itself implanted over or near the cervix, which is developed during the last three months, then its vessels are liable to be put on the stretch and ruptured, by the disproportionate growth of that part of the uterus on which it is inserted, and hence the hemorrhagy.—*Monthly Retrospect*, Jan. 1849, from *L'Union Médicale*, Nov. 21, 1848.

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63. *Cerebral and Meningeal Phlebitis in Puerperal Women.*—M. Ducrest, who has published an essay on the occurrence of cerebral and meningeal phlebitis in puerperal women, states that the disease is met with but rarely. When it is met with, however, it constitutes a very dangerous complication of the puerperal state. Encephalic phlebitis presents all the characters which belong to the anatomical lesions observed in the phlebitis of other organs, that is to say, it is adhesive or suppurative. In the first case, we find, in the calibre of the cerebral vessels, a firm clot adhering to the vascular parietes; in the second, pus is found in the veins and in the cerebral mass, either infiltrated, or in the form of abscesses; the extent, seat, and number, may vary. As the result of these lesions, or occurring at the same time, we may note other secondary alterations, such as meningitis, meningo-encephalitis, hemorrhage, and ramollissement. In all cases there were purulent collections elsewhere besides the brain, that is, in the uterus, lungs, &c. It is worthy of notice, that cerebral phlebitis principally attacks tuberculous subjects; M. Ducrest looks upon it as a secondary disease, a consecutive phlebitis.

The symptoms described by M. Ducrest are chiefly those which are indicative of cerebral mischief; they are not diagnostic of the disease in question. They are —more or less intense headache, delirium of a variable character and duration, preceded or followed in some cases by a sort of obtuseness or torpor of the intellect; convulsions, trembling of the muscles of the limbs and face; eclampsia, palsy, generally partial and incomplete; contraction, generally backwards, even to convulsions; numbness of the limbs; feeling of burning and weight in the eyes, irregular dilatation of the pupils, &c. These symptoms are neither constant nor diagnostic; nor are they certain data for the prognosis and treatment of the disease. M. Ducrest nevertheless concludes, that the occurrence of all or of the greater part of these symptoms indicates an organic affection of the brain, whatever it may be, which consequently ought to attract the attention of the practitioner; that it should be treated according to the strength of the patient, and the therapeutic rules which guide the treatment in acute diseases of the brain; and lastly, that, as there are stages in the progress of encephalic

phlebitis, a prompt and active treatment should be adopted in the early part of the disease, to prevent its passing into the suppurative stage.—*Journ. Psychol., Med.* Jan. 1849, from *Archives Générales de Méd.*

CHOLERA.

64. *Chemical Examination of the Liquid Vomited during Cholera.* By Alfred S. Taylor, F.R.S.—The specimen which was submitted to examination was delivered to me by Mr. Kite, medical superintendent of the Tooting Asylum for pauper children, with the following account of the case:—"The fluid was the matter vomited by a child, nine years of age, who was suddenly taken ill while at school, at 11 A.M., on the 3d of January. The first symptom was diarrhœa, followed by vomiting of the undigested food, the child having had breakfast between seven and eight o'clock—*i. e.* more than three hours before the first attack of vomiting; she had not complained of diarrhœa previously. The breakfast consisted of a mixture of gruel and arrow-root, with bread. After the first vomiting the extremities became cold, and the pulse weak and feeble. The vomiting and diarrhœa continued, the former the more constant, and collapse became complete. She complained of pain at the epigastrium, but there were no cramps; the tongue was furred, and the matter vomited assumed the appearance of rice-water; the dejections were likened by the nurses to soapy water. The fluid brought to you was thrown up very soon after the first vomiting, when the undigested food was rejected; it was in fact the production of the second vomiting, and immediately poured from the vessel into the bottle. The usual remedies were adopted—calomel, ammonia, opium, stimulants, and warmth externally, but without effect. The case proved fatal at 1 P.M. on the 5th of January, fifty hours from the appearance of the first symptoms."

The *liquid* was turbid, and when shaken appeared like dirty water. When left at repose, a sediment of a curdy-looking insoluble white substance subsided. There were no distinct traces of food, with the exception of a few husks resembling those of barley undigested. Iodine water gave no blue colour either with the sediment or the clear liquid. There was no indication of the presence of blood. The white deposit had the appearance of pus, and had none of the ropiness of mucus. The supernatant liquid had the colour of very pale or diluted serum. Its specific gravity was found to be 1·012. One hundred grains submitted to evaporation at a gentle heat on a sand bath, yielded 3.3 grains of solid extract, resembling a layer of brown varnish. This residue yielded by incineration 0.8 grs. of saline matter, almost entirely soluble in water. The only alkali detected in the aqueous solution of the ash, was soda. This solution had a slightly alkaline reaction (alkaline carbonate), and was abundantly precipitated by nitrate of silver, the precipitate being insoluble in nitric acid. A salt of baryta gave a very slight precipitate (sulphate of baryta). There was no trace of a soluble phosphate, nor could any insoluble phosphate (of lime) be detected in the residue. The ash, therefore, consisted of chloride of sodium, sulphate of soda, and carbonate of soda, the first-mentioned salt forming not less than three-fourths of the whole.

The clear serous liquid was without remarkable odour, and had a slightly acid reaction. It became very frothy by agitation. A portion was boiled, without any coagulum, or even turbidity, being produced. It remained equally unchanged on the addition of strong nitric acid, and no opacity was caused by ferrocyanide of potassium and acetic acid. Alcohol and pyrophosphoric acid produced in it no change. It was therefore obvious that the liquid contained no albumen. Acetic acid did not produce in it any change: casein and mucus, in a soluble or diffused form, were therefore absent. Muriatic acid was added to it, and it was allowed to stand for a few hours, but there was no change indicative of the presence of the colouring principle of bile; and nitric acid did not indicate the presence of this secretion. A slip of white paper plunged into it and dried did not present any yellow tint. When a small quantity was boiled with pure caustic potash holding dissolved, oxide of lead, it became perceptibly

darker, indicating the presence of sulphur in the animal matter diffused through it. It was abundantly precipitated by nitrate of silver (owing to the chloride of sodium contained in it), slightly by the nitrate of baryta (sulphate), abundantly by the acetate of lead (from organic matter), the greater part being redissolved by a small quantity of nitric acid; and it was not affected by the addition of alum. Protonitrate of mercury produced in it a dense white precipitate, and there was no separation of oxide of mercury, such as is produced on adding this salt to albumen, serum, or gelatine: corrosive sublimate rendered it slightly opaque, but produced in it no precipitate. Tincture of galls threw down an abundant white precipitate which was not re-dissolved on boiling. When mixed with solution of caustic potash in the cold, and acetic acid was added to the mixture, no precipitate was produced. I have found that a precipitate has been uniformly produced on subjecting albuminous or serous liquids to this mode of testing. On adding sulphate of copper to the liquid, and subsequently caustic potash, the oxide was re-dissolved, forming a light blue solution; but after boiling, no deposit of red oxide of copper was procured.*

The constitution of this liquid was therefore—

	Animal matter, ...	2.5
Salts	Chloride of sodium in large proportion,	.8
	Sulphate of soda, ...	
	Water, ...	96.7
		100.

The carbonate of soda was no doubt a product of the decomposition of the organic matter. The acidity of the liquid may have been due to the presence of some organic acid.

The *solid white deposit* was quite soluble in boiling caustic potash, and yielded, on the addition of oxide of lead, the usual evidence of the presence of sulphur. The potash-solution obtained by boiling the sediment in the caustic alkali, was rendered opaque on the addition of acetic acid: but no excess of the acid caused it to become again clear. The alkaline solution was also precipitated by diluted nitric acid, and the precipitate was not re-dissolved by an excess of the acid. The white sediment was soluble in boiling concentrated nitric acid, and the acid solution was precipitated by dilution with water. When drained of water and covered with strong acetic acid, it did not swell up—a property which is characteristic of fibrine, nor could it be obtained in a state of solution by the addition of distilled water, and exposing it to a boiling heat. When boiled with concentrated muriatic acid, it became dissolved, and formed a reddish purple solution, which gave a pinkish white deposit when diluted with water. In this property it resembled the action of muriatic acid on what Mulder has designated the compounds of protein. To another portion of the sediment, caustic potash was added, but it did not become gelatinous, or assume that appearance which is observed in pus when thus treated.

From the result of this analysis, it appears that albumen is not necessarily a constituent of the choleraic liquid, although there are many theories respecting treatment, based on the assumption that the blood forces out its serum through the intestinal mucous membrane. Not a trace of albumen existed in the specimen here examined; fibrine was also absent, as there was no spontaneously coagulable principle, and the sediment was insoluble in acetic acid. The animal substance dissolved in the clear liquid, differed from gelatine in the fact that it yielded sulphur, and had no tendency to gelatinize. The animal matter may have consisted of bile altered by disease, or of some morbid animal product poured out by the blood under the influence of the choleraic poison. The large quantity of chloride of sodium contained in it is consistent with the view generally entertained by pathologists, that, under an attack of cholera, this salt is abundantly excreted from the system,—not by the kidneys, (for the urine has been found deficient in chlorides,) but by the gastro-intestinal mucous membrane.

* The production of a blue solution under these circumstances is not an indication of the presence of sugar, unless the oxide of copper should be reduced by boiling.

The chemical nature of the evacuations of cholera patients has been examined by various pathologists. In the *Comptes Rendus* for 1847, M. Andral gives an account of the fecal evacuations. The most important fact which he observed, was the entire absence from these liquids of the serum and fibrine of which it was supposed they chiefly consisted. He could not discover in them any trace of albumen; and M. Favre also found, as the result of his analysis, that the organic substance contained in the choleraic liquid, possessed none of the properties of albumen. The observations of these pathologists are strikingly confirmed by the results of the analysis in this case. M. Andral was then induced to examine the blood, and he found that the proportion of albumen was almost unaltered. There was neither manifest increase nor diminution. Dr. Buchanan states, that in a certain stage of the disease, which he denominates the albuminous, he has found the evacuations in cholera to contain albumen. It would thus appear that their composition is liable to vary. It will be observed that the liquid examined in the present case was the product of the second vomiting in an early period of the attack, and more than three hours after food had been taken.

In the paper published by M. Andral, he speaks of the fecal evacuations in cholera having a highly alkaline reaction, like serum; but in this respect his opinion appears to have undergone some change. At a recent discussion in the Academy of Sciences, he states that he has almost constantly found the vomited matters to be *acid*, as well as the mucous membrane itself. The liquids discharged by vomiting and purging have hitherto been regarded as similar, and the more recently expressed opinion of Andral is in conformity with the fact observed in the present instance. M. Burguieres states that the vomited matters in cholera were evidently acid, but he commonly found them mixed with portions of food partially digested. This gentleman also states, that after the patients had vomited three or four times, the acidity disappeared, and they became alkaline. The alkaline reaction especially existed when the vomited matters assumed the white and flocculent appearance characteristic of the evacuations of cholera. Dr. Heller found that the matters vomited during the progress of the disease were very watery, and of a greenish or yellowish green colour. They also had a slightly acid or neutral reaction; and from his examination he considered bile to be the principal ingredient. This pathologist observed that the chlorides were almost entirely absent from the urine.

The nature of the white sedimentary matter appears to be very obscure. It did not in this instance present the physical and chemical characters of coagulated albumen, fibrine, mucus, or pus. It bore a strong resemblance to the last mentioned morbid compound, with the exception that it behaved differently when treated with potash: besides, the deposit was mixed with a quantity of white curdy matter altogether unlike pus in its appearance and chemical properties. M. Andral, who has also carefully examined this peculiar deposit, states that it does not consist of fibrine: under the microscope he could not trace any filamentous structure. He found it to be composed of numerous nucleated and nucleolated cells, closely resembling pus-globules. Besides these globules, which were very abundant, the masses contained numerous particles of epithelium.

One fact appears clear from these researches, that the cholera liquid is not to be regarded as a mere excretion of the watery parts of the blood mixed with fibrine. At the commencement of the attack, the vomited matters are acid, and mixed with a morbid product analogous to pus, but differing in properties from all the organic compounds hitherto found in the living healthy body.—*Lond. Med. Gaz.*, Feb. 2, 1849.

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65. *Microscopic examinations of the Mucous Membrane of the Stomach and Bowels in Cholera.*—Dr. Ludvic Boehm, who has received the appointment of successor to Dieffenbach in the surgical klinik at Berlin, devoted considerable attention to the microscopical anatomy of cholera, when raging in Germany; and since the subject must necessarily be of the greatest interest, and the present not an inappropriate period to introduce it, I will endeavour, as briefly as possible, to give a *précis* of the seven chapters in which he has described the

results of his examination of more than one hundred bodies of patients who had died of that disease.

Chap. I. *On the Loss of Intestinal Epithelium by Excessive Desquamation.*—The author shows that the chief pathological alterations of the mucous membrane in cholera consist in a desquamation of the epithelium, by which it is often altogether thrown off. This process he accurately examined. Although its seat is the whole mucous lining of the intestines, it is most clearly seen, and the vessels, too, are more injected, in the lower portion of the ileum, and there Dr. Boehm concludes that it commences; the stomach and other portions of the bowels are less affected. The generally isolated spots in which the process of desquamation has commenced, are characterized by a whitish colour, and a soft velvet-like appearance of the surface, as if the villi were much more raised and developed than natural; and such a villus, brought under the microscope, shows its epithelium much thickened and divided by concentric lines, marking the beginning of the process by which it is reduced into its elementary parts, or cylindrical cells, which soon become detached and altogether thrown off. In this state a villus appears denuded of part of its epithelium, and that which remains, as consisting only of a few simple cells. Ultimately, the denuded portion appears covered with small white depressions, the points by which the cells of the epithelium had been attached to it, and it may not unaptly be compared to the top of a thimble. Another mode by which desquamation takes place, is somewhat similar to the formation of bullæ on the cutis, the epithelium becoming loosened from the villus, and thrown off entire from it, as in a common blister, and the sheaths of the villi falling off as little sacs. In one or other of these modes, the mucous membrane is denuded of its epithelium, leaving an abraded surface. Large portions of epithelium are often thrown off, and these exhibit on one surface the casts or rather moulds of the cylindrical and elevated villi, and on the other their corresponding foramina. The denuded villi become reduced in circumference, more flaccid, and subjected to a complete process of maceration. Their former rounded apices become cleft and brush-like, and in this way they are soon destroyed. The cryptæ mucosæ or glandulæ Lieberkuhnianæ being destroyed, the abraded mucous membrane becomes fissured, and then extravasation of blood takes place. The desquamation of the epithelium can take place in a very short time. Boehm asserts that he has seen that process terminated, and deeper destruction of the mucous membrane commenced, in the bodies of patients who, six hours previous to death, had been in health.

Chap. II. *Microscopical Observations on the Contents of the Stomach and Intestines.*—The contents of the stomach and bowels, being poured into a convenient glass vessel, soon separate into a semi-transparent fluid, and an opaque whitish-yellow sediment. This upper semi-transparent fluid, Dr. Boehm thinks, is the real pathological secretion. The lower sediment is shown by the microscope to consist of an immense number of epithelium-cells. The more violent the disease has been, the clearer is the upper fluid, the whiter the sediment, and the more perfect the cells. When the disease has been lingering, the contrary is the case. The appearance of the contents of the stomach and bowels is much modified, according to the quantity of epithelium it contains, and the integrity or the disintegration of its cells; thus it is milky, purulent, creamy, gruel-like, or mucous. In the colon, the epithelium is generally so much destroyed that its cells cannot be distinguished. The flocculi which have been described by others, consist merely of larger and more perfect portions of epithelium.

(*a*) *Bilious Contents.*—The functions of different glands, as the kidneys, the salivary glands, those of the eye and liver, &c., are discontinued during an attack of cholera; therefore, and sometimes for days, no secretion of urine takes place, the mouth and eyes are dry, and the biliary ducts are found to be empty and collapsed. When the gall-bladder is found full, its contents are to be referred to the previous period of health. A desquamation of the epithelium takes place in the biliary ducts, in the same manner as in the intestines. According to Boehm, the yellowish tinge of the contents of the stomach and intestines must not be attributed to fluid bile, but to epithelium-cells tinged with its colouring matter, and the fluids so coloured, do not become putrid as soon

as those that are not so coloured. In one-third of the cases examined, and remarkable for the acute and rapid progress of the disease, no bile was found in the intestines; in another third, the patients had died at a period when the bile was generally effused; and, finally, in very protracted cases, a superabundance of bile was found. Cholera patients very rarely vomit green and bitter fluids. In the vomited matters, a sediment is generally found, of a dark, nearly black, and mud-like character: and in dissection, similar masses strongly adherent are found, as flocculi and streaks between the prominent wrinkles of the mucous membrane of the stomach. Treated with nitric acid, these become of a reddish-brown colour, and caustic potash dissolves them into a green fluid. Dr. Boehm thinks them an altered condition of the bilious pigment.

(*b*) *Bloody Contents.*—Intestinal hemorrhage, although rarely profuse, is always a fatal symptom. In this blood, few corpuscles are found, and those always altered in form; according to its extent, the contents of the stomach and bowels are either reddish, chocolate-colour, or red brown. The feces are very offensive; and, when examined, the mucous membrane is found ecchymosed and marbled with red lines and spots.

In this chapter, Boehm also describes the feces of cholera patients, which sometimes in the first stage have a slight bilious tinge, but more generally consist of the well-known rice-water description, abounding in flocculi, or portions of thrown-off epithelium, which sometimes include minute rhomboidal crystals.

Chap. III. *The Flocculi found in the Urine of Cholera Patients.*—With the commencement of convalescence, the secretion of urine is restored. It has a sediment of white and loose flocculi, and investigation has shown these to consist of epithelium thrown off from the mucous membrane of the uropoietic organs. A thick whitish fluid, consisting chiefly of epithelium-cells, is found in the renal pelvis; and desquamation, as in the intestines, in the canaliculi renalis, ureters, and bladder.

Chap. IV. *Oily Fluid found in the Intestinal Villi of Cholera Patients.*—Dr. Boehm's inquiries on this subject show him to be a most accurate and indefatigable observer; but, as it is already known, I need not dwell long upon it. It is remarkable, however, that the villi filled with oil, and seen with the naked eye, give the intestine an appearance as if it were sprinkled over with many yellow transparent globules.

Chap. V. *A Vegetation similar to the Saccharomycis Cerevisia found among the Contents of the Intestines of Cholera Patients.*—Dr. Boehm has found in the contents of the intestines microscopical, colourless corpuscles, of a regular and mostly oval form, connected into longer or shorter chains, giving off lateral branches, and resembling a ramificated figure. In the stomach, they are developed into far-spreading, tree-like ramifications, generally enveloped in mucus. He found a large number in the small intestines, fewer in the colon, although in some cases, only there. They were also in the feces and vomited matters.

Chap. VI. *The Cryptæ Mucosæ in Cholera.*—The apertures of the glandulæ Lieberkuhnianæ, or mucous crypts, seen in the healthy subject as black points, are in cholera filled by white corpuscles, sometimes so prominent that they can be removed by a needle, in the form of long stopper-like coagula. When these are taken out, the apertures of the cryptæ are as round and unchanged as in the healthy subject; sometimes they are a little larger, and when so altered in a high degree, the mucous membrane is seen covered with white spots or punctures, in consequence of the desquamation of the epithelium of the cryptæ. The progress of this desquamation is very peculiar and interesting. It appears that after desquamation of the epithelium in the crypta, new epithelium is formed at its base, which in its turn is again loosened and protruded. Thus a crypta very soon resembles a villus, from the cylinder of epithelium which is protruded from its aperture, and the number of villi seem to be considerably increased.

Chap. VII. *The Changes in the Glandulæ Solitariæ and Peyerianæ in Cholera.*—As in severe diarrhœa so in cholera, the capsules of the glandulæ Peyerianæ are softened, and their tops or apices ulcerated, so that their contents are evacuated, and the capsules, as so many open mouths, or fossæ; they also lose their granular, and assume a reticular, appearance; besides which they become elevated or protruded by exudation taking place in the subjacent cellular tissue. Real ulceration is not found in these glands. A third alteration of

form consists in their surface becoming much wrinkled, but this generally in young subjects only. The glandulæ solitariæ are also more distinctly seen in cholera, in consequence of their capsules being more distended, and the exudation occurring in the subjacent cellular tissue.—*Med. Times*, June 24, 1848.

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66. *Terchloride of Carbon as a remedy for Cholera.*—Dr. Jones Lamprey, in an article in the *Medical Times*, (Jan. 6, 1849,) states that the terchloride of carbon was originally used as a remedy in the treatment of cholera, by an English physician practising at Calcutta, and was lately tried at St. Petersburgh by the Russian physicians, on whose recommendation it was introduced into Berlin by Professor Throshell.

Chloride of carbon Ch 4. C 4. was originally discovered by Mr. Faraday in the year 1821, who produced it by bringing olefiant gas in contact with chlorine, and exposing the whole to the influence of light; when chlorine is brought in contact with olefiant gas, which is a compound of 4 equivalents of carbon, and 4 of hydrogen, the latter is abstracted and replaced by the same amount of carbon; hence, the different chlorides of carbon, all which, with the exception of the perchloride and subchloride, are colourless, volatile, ethereal liquids, having a pungent and sweetish taste, and, when given internally, they are found to act instantaneously as powerful diffusible stimulants to the nervous and circulating organs, at the same time allaying pain and spasm similar to chloroform; it is, also, somewhat diaphoretic.* Nor had it any direct chemical action on the blood, as it was originally supposed by those whose theory was, that the phenomena of cholera were owing to a septic condition of that fluid. That chlorine and carbon being found to act as powerful antiseptics, the compound (terchloride of carbon) also possessing this property, and being of an ethereal nature, and readily diffusible, would, when administered, serve to counteract this putrefying tendency, and cure the disease. On the other hand, practical experience shows, that all its virtues depend upon its stimulating and antispasmodic properties, and further examination proves, that it could have no beneficial effect were it purely a direct chemical antidote, as the blood in cases of cholera, though found to be unoxidized, abounding in carbon, black, in a disorganized condition, and closely resembling, is yet deficient in many of the characteristics of putrefied blood; these appearances being solely attributable to defective pulmonary circulation.

The medical properties that have been enumerated above, make it highly valuable as a remedy in the treatment of certain stages of cholera, though comparatively useless when applied without the assistance of other remedial agents, as when cholera patients were brought into hospital, they were always found in a state of great collapse, resembling asphyxia, and in order to restore animation, as it were, it was necessary to have recourse to the most powerful stimulants; of these, cold affusion, which you have already drawn attention to in your review of my "Remarks and Observations on the Cholera at Berlin," was found to be the most efficacious, and was accordingly applied to every case; but its effects being transitory, it required frequent repetition, and, under such circumstances, the discovery of some remedy that would keep up or increase the stimulus given by the cold affusion would be of the utmost importance; for this purpose, the terchloride was found to answer in a great number of cases, but, unfortunately, not so in all, and was administered in the following way:—After the vital powers of the patient had been stimulated by the cold affusion, a dose of five drops of the terchloride was given, which had the immediate effect of increasing the stimulus,—giving the pulse greater volume, raising the temperature of the body, and restoring the natural colour and elasticity of the integuments. The dose was repeated every hour, and in extreme cases every half hour.

This treatment was chiefly applied to the worst cases, and frequently attended with astonishing success; but, unfortunately, though many bad and hopeless cases recovered, it did not prove uniformly successful, (not more than half the

* It is also found useful in correcting the fetor of foul ulcers, from the antiseptic properties of its constituents.—See Mr. Tuson's Letter to the *Medical Times*, December 2d, 1848.

number of cases so treated having recovered,) nor did it prevent the occurrence of the usual fatal complications.

At first its action was thought to have been specific, but, like all other remedies recommended as such for this disease, it was found equally valueless when applied without the assistance of other remedial agents; it was also found to be quite inert without the previous application of the cold affusion, as a case that was treated with warm applications, frictions with warm flannels, extensive application of sinapisms, with other stimuli, and in which the terchloride of carbon was given, in addition to the above, terminated fatally.

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67. *Quinine in Cholera.*—Dr. Little says, (*London Med. Gaz.*, Dec. 15th, 1848,) from all he has witnessed of malignant cholera, he is impressed with the belief that, it is more nearly allied to febres than to any other nosological class, and, consequently, he considers, that quinine administered before the supervention of decided collapse in the large doses required to arrest malignant intermittents, say in doses of half a drachm and upwards, deserves a trial.

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68. *Blood-Letting in Cholera.*—Dr. William Robertson, Physician to the Edinburgh Cholera Hospital, states (*Monthly Journ. Med. Sci.*, Jan. 1849)—"Of the practice of *blood-letting*, in the early stage of the disease, I have now had considerable experience, and am confirmed in my opinion of its efficacy in preventing or modifying the more formidable symptoms of the disease. Of 33 patients bled at the arm, 2 were not treated for cholera, but laboured under pneumonia and died; a third was bled to a trifling amount (℥j) during the stage of reaction, and recovered. Of 30 who were bled to amounts varying from ℥xii to ℥xxx, 7 were males, 23 females; of the latter, 2, now convalescent, *had not cholera*. The result of the treatment applied to 28 cholera cases has been as follows—of 7 males bled, 2 have died; of 21 females, 4; 5 are still under treatment, but are believed to be convalescent. Of these 28 cases, it is quite possible that 3 or 4 may not have been real cases of cholera. The diagnosis of the disease in its early stage is far from certain; but had these patients not seemed to other practitioners as well as myself to be labouring under the epidemic pestilence, they would neither in the first instance, have been sent into hospital, nor after admission been subjected to the remedy.

"The most marked effect of venesection seems to be the prevention or mitigation of the stage of collapse. Of the 28 patients bled, 12 had no distinct collapse; and of 16 who had algide symptoms, 10 recovered or are now doing well. The remedy is, I think, most efficacious when cramps and oppression at the chest are prominent symptoms; at least the immediate relief to the patient has, in such circumstances, been most remarkable; and when the venesection has been followed by the administration of opium in full doses, the progress of the disease has sometimes been apparently arrested."

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69. *Injection of Saline Solution into the Veins in Cholera.*—Dr. Robertson reports unfavourably of this remedy. He says, (*Monthly Journ. Med. Sci.*, Jan. 1849,) "the injection of a saline solution into the veins has been resorted to in eighteen cases. In several of these there was no appreciable effect from the operation, and the patients died in the state of collapse. In others, the immediate improvement was most astonishing; patients who seemed pulseless and at the last gasp, were in a few minutes so far revived, that convalescence was looked forward to with some confidence. Hopes thus inspired were, however, uniformly disappointed; not a single patient survived the operation for more than nine hours. Instead of the brass syringe (the use of which is attended with considerable trouble and danger), I have of late substituted a column of fluid in a glass tube as the means of injecting the veins. The apparatus is constructed on the plan of the mercurial tube used by anatomists in injecting the lymphatics, and is extremely simple, consisting of a wide tube of thirty inches in height, open above to receive the fluid, and terminating below in a short caoutchouc tube, which is adapted by means of a tinned nozzle and stopcock to the vein-tube. The injecting force may be reduced by holding the glass tube in an inclined position. This apparatus has answered well, *mechanically* speaking, but the death of eighteen patients in succession has induced me

finally to abandon the practice of injecting fluids into the veins, and I shall not resume it till I find that some other practitioner has met with more encouraging results."

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70. *Conclusion respecting the Mode of Propagation of Cholera in Russia, in* 1847–48.—Dr. FRETTENBACHER, of Moscow, in an elaborate statistical report of the progress and ravages of cholera throughout the Russian Empire, during the last two years, gives the following general conclusions as the result of his observations on the subject of its propagation:—

1. Intermittent fevers had prevailed throughout the whole extent of the Empire, previously to the appearance of the cholera. In 1846, they had assumed in many places an epidemic character. In 1847, when the cholera appeared these fevers ceased, and they reappeared as the cholera declined.

2. The cholera was preceded, almost invariably, by disorders of the digestive organs and intestinal canal. These derangements increased with the appearance of cholera, and decreased in severity as it disappeared. They prevailed throughout the whole extent of Russia in Europe, even where cholera was not present.

3. The cholera followed the course of large rivers and the chief lines of human intercourse. Prevailing winds had no influence on its progress.

4. When the cholera appeared in places out of its principal route, it was generally found to have manifested itself shortly after the arrival of persons from districts where the disease was prevailing.

5. In localities where the cholera was thus conveyed by individuals, it did not always spread as an epidemic, but those only who came in contact with the affected had the disease, and if it did spread epidemically under these circumstances, its progress was very slow.

6. In many places the cholera appeared in an epidemic form, without any communication with infected districts, under the influence of general causes, of which we have as yet no satisfactory explanation.

7. The cholera propagated itself especially in low situations, in unhealthy and confined dwellings, where the inhabitants were previously debilitated by disease, intemperance, and other depressing causes.

8. Some localities which, from accidental circumstances, were carefully isolated, such as large establishments, and even entire villages, completely escaped the visitation.

The preceding facts prove that this disease, originally epidemic, may become energetically contagious, or, in other words, communicable from man to man.—*Gazette Médicale*, Jan. 13, 1849, and *Medical Gazette*, Feb. 2d.

ANÆSTHETIC AGENTS.

71. *Action of Chloroform.*—The very animated and somewhat harsh discussion on M. MALGAIGNE's report on chloroform, in the Academy of Medicine of Paris, which this gentleman presented some time ago in the name of a numerous commission, has at length been brought to a close. We subjoin the conclusions as adopted by the Academy:—1. In the medico-legal fact which has been communicated to us, we find none of the indications of the poisonous effects of chloroform; we therefore propose that the Academy do answer the inquiries of the minister by stating that in the Boulogne case the patient did not die by the effects of chloroform. 2. That there are a great many examples of such sudden deaths, either occasioned by an operation, or independently of the surgeon's interference, and, above all, quite unconnected with chloroform inhalations, when the most careful investigations have failed in finding the cause of death. 3. But that in the present case the most probable explanation seems to be, the admission of a considerable amount of air into the blood. The conclusions of the second part of the report bear on the general question of chloroform; they are as follows:—1. Chloroform is one of the most energetic agents; it may be looked upon as coming very near the class of poisons, and should not be used by inexperienced hands. 2. Chloroform is apt, both by its smell and contact,

to irritate the respiratory organs, which circumstance calls for much reserve where affections of the heart or lungs are known to exist. 3. Chloroform possesses a toxic action peculiar to itself, which has been taken advantage of in medicine by arresting it at the period of insensibility, which action, however, may, by being too much prolonged, cause immediate death. 4. Certain methods of administering chloroform add to the danger; thus there is a risk of asphyxia either when the vapour is not sufficiently diluted with atmospheric air, or when respiration is not free. 5. All these dangers can be avoided by attending to the following precautions:—1st. To refrain altogether from using chloroform, or else arresting its action, in all cases where counter-indications are well ascertained; 2dly, to take care, that during the inhalations atmospheric air may be sufficiently mixed with the vapours of chloroform, and that respiration may be carried on freely; 3dly, to suspend the inhalation as soon as insensibility is obtained, though it may be resumed if feeling should return before the operation is over. 6. It is advisable not to administer chloroform after meals.—*Lancet*, 2d Feb. 1849.

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72. *Deaths from Chloroform.*—In our original department, p. 379, will be found an extremely interesting paper, by our esteemed collaborator, Professor Warren of Boston, on the use of chloroform, in which he has given a summary of the cases of death following the use of chloroform made public up to the time of that paper being put to press. We have now to add to this long list, three cases since reported.

Case I.—The first case we shall notice, took place at Westminster, on Saturday, February 17th. An inquest on the body was held on Tuesday, February 20th, before Mr. Bedford, the coroner for Westminster. The deceased, aged thirty-six, who was a mason's labourer, had been for nearly five weeks a patient of the Western Dispensary, on account of a severe injury to the great toe, which had been crushed by a wheel passing over it. For some time the injured member appeared to go on favourably, but became worse at the close of last week, and on application at the dispensary, Mr. W. Brown—dresser to the surgeon, Mr. Nunn—visited the patient, and found gangrene to have occurred, and in examination he removed some fragments of the broken phalanx of the toe. That gentleman then gave it as his opinion, that amputation of the toe should be performed, and appointed to call the next day for its performance. On Saturday afternoon the man was accordingly seen, and expressed his desire to inhale chloroform. Half an ounce, which was at hand, was administered by being sprinkled on a handkerchief, and held over the mouth and nose, care having been first taken to ascertain the non-existence of thoracic or other disease, which might be deemed to contra-indicate the use of the chloroform. This quantity of the agent failed, however, to produce anæsthesia, having caused only the ordinary excitement and struggling. A person was, therefore, dispatched to procure some more, which he eventually did, from Mr. Hooper's, Pall-mall. During his absence, which was for more than two hours, the patient entirely recovered from all effects of the chloroform, having, it is to be remarked, never lost his sensibility, and was occupied in conversation, &c. On the arrival of the fresh supply, half an ounce was again poured on a handkerchief, and applied to the mouth and nostrils, care being taken to allow the entrance of air at short intervals. After a period of excitement lasting two or three minutes, insensibility was induced, and the breathing, at first rather hurried, became now slower and rather stertorous; the eyelids quivered on the approach of an object to the eye; the pupil became somewhat dilated; the pulse was at about 70, moderately strong. As soon as anæsthesia was produced, the operation was proceeded with, and occupied not more than two minutes. At the close of the amputation no blood escaped, when pressure was removed from the arteries. In the meantime the breathing became slower and less full, and a pallor, with coldness, diffused itself over the body, and showed itself in the lips, &c. The pulse receded in strength and frequency, and very shortly ceased at the wrist. The features assumed a ghastly expression, and everything betokened impending dissolution. A few respirations were noticed after the pulse had ceased at the wrist, but in about ten minutes from the time of inhalation, respiration altogether ceased, and the chin presently dropped.

On the first appearance of these alarming symptoms, air was freely admitted into the room by the windows and door, some brandy poured down the man's throat, cold water dashed on him, and bottles of hot water applied. Artificial respiration was almost immediately resorted to, and kept up upwards of an hour, but all attempts at restoration were fruitless. Between three and four hours after death, the rigor mortis came on, but appears to have lasted no considerable time.

On the following Monday afternoon, by the coroner's warrant, a post-mortem examination was made by Mr. Nunn, Dr. Arlidge, Mr. W. Brown, and others. The body was that of a large, strongly-built man, in appearance much older than thirty-six. The rigor mortis had passed away; no smell of chloroform could be perceived, or any odour but that arising from commencing decomposition. The surface was generally pale. No mucus had issued from the mouth or nose. On cutting through the abdominal walls, which were very muscular, the intestines were found much distended with flatus; the superficial small ones congested, and clearly showing the ramifications of their vessels in their coats, whilst the congestion of the deeper-seated portions was still more marked, and of the colour of port wine. The stomach was empty, the deceased having partaken only of a breakfast of bread and milk on the day of his death. No sickness had occurred from the effects of the chloroform. The veins of the stomach were much distended with blood, and this distention was the more marked on its inner surface; the latter of a reddish-gray colour, the red portions being in the lines of the congested vessels. The liver was of large size, firm, but yet rather easily broken by pressure, and of a leaden hue, as if filled with venous blood; the gall-bladder contained very little bile; the structure of the kidneys was healthy, but of a dark venous colour from congestion; the spleen very dark, congested, and friable; the bladder contained very little urine. On examining the chest, the lungs were found of large size, not collapsed, of a dark venous hue throughout, and full of blood, a large quantity of blood escaping from them when cut into; they were, however, everywhere crepitant, and free from disease, save a few carbonaceous spots, and from morbid adhesions. On opening up the bronchi and trachea, the mucous membrane presented a very congested appearance, being of the colour of dark port wine; this depth of colour was the more remarkable in the smaller divisions of the bronchi. The bronchi also contained a small quantity of frothy mucus, slightly tinged with blood. The thyroid bodies were very large, and full of blood. No blood was effused into the cavity of the thorax. The heart was rather large, but flabby, and its walls collapsed: on opening it, the walls of the ventricles were found to be thin in proportion to their size; the auricles were empty; the right ventricle contained about an ounce of semi-fluid blood; and about an equal quantity of similar and venous-coloured blood was found in the left ventricle, but without the trace of a fibrinous clot. The lining membrane of the heart was dark-coloured, from congestion. All the valves were healthy and entire. Some small patches of atheromatous deposit, in an early stage, were present at the commencement of the aorta, and of the great vessels issuing from it. On cutting through the calvarium, not more than half an ounce of venous blood escaped, and on removing the skull-cap, not more than an ounce and a half. The sinuses and veins opening into them contained blood, but not to any remarkable amount, being but moderately full. The vessels of the pia mater were somewhat congested; the cerebral convolutions small; the gray matter not in any way deepened in colour. The same *partial* fulness of the vessels of the meninges was met with in the cerebellum and medulla oblongata, but no other morbid appearance. But few bloody points occurred on cutting into the cerebral mass.

In the course of the inquest the widow of the deceased, and the landlord of the house, who witnessed the operation, and assisted in the attempts at restoration, were examined; as also Mr. W. Brown, who performed the operation, and Dr. Arlidge, who attended at the post-mortem examination. The evidence went to show that chloroform was the cause of death; that it was administered with caution; and that every attempt had been made to ward off the fatal termination. The jury, after a short consultation, returned the verdict—"That the deceased, Samuel Bennett, died of chloroform, properly administered."

It may be remarked, that the deceased had a severe fall of fifty feet, as stated

by his relatives, about three years since, and was a patient at Westminster Hospital for a wound in the head, attended with delirium, and afterwards erysipelas; but since recovery had usually enjoyed very good health, and been free from any cerebral symptoms, or other disorder.—*Lancet, Feb.* 24, 1849.

Case II.—Dr. Barrier, surgeon to the Hôtel Dieu, of Lyons, in a letter to *L'Union Médicale*, gives the details of a fatal case from the inhalation of chloroform. The subject was a boy, seventeen years of age, employed in a mining district, and admitted into the hospital for caries and necrosis of the middle finger of the right hand. The removal of the finger was resolved upon, and as the boy seemed to enjoy pretty good health, no counter-indication to the use of chloroform was discernible. A very thin compress was placed on the face, and the anæsthetic liquid gradually dropped on it. In four or five minutes, the patient was still speaking, and conscious of pain; a minute afterwards, he spoke again, and showed a little agitation. By this time, from one drachm and a half to two drachms of chloroform had been poured on the lint, and it is to be supposed that a great deal of it went off by evaporation. The pulse had all the while been perfectly normal. All at once, the patient rose suddenly, and threw about his limbs, but he was soon brought down again by the assistants. This excitement did not altogether last more than a quarter of a minute, when it was found that the artery at the wrist had ceased beating. The cloth was immediately taken off from the face, which looked very haggard. The heart ceased to beat, and no pulse could be detected; respiration, was, however, still carried on, but soon became weak, slow, and ceased completely in about half a minute. On the employment of very energetic restorative means, the breathing began again, with a certain amount of vigour; the pulse, however, could not be felt. The frictions were continued with renewed vigour, but the respiration soon ceased again, and half an hour's constant exertions remained utterly useless. The inspection of the body, from peculiar circumstances, was not made until seventy-two hours after death. The stomach contained about eleven drachms of a thick fluid, presenting a purple colour: this organ, as well as the rest of the alimentary canal, was distended with gas. The heart, of the usual size, much compressed and fallen in, contained neither air nor blood. The parietes of the organ presented only a little red froth, as if the blood had been much agitated by the carneæ columnæ. The venæ cavæ and the venæ portæ were filled with black and fluid blood. On the Eustachian valve there was a fibrinous clot weighing about one drachm; this was the only clot which was found in the heart or great vessels, and these organs were opened with such care, that it remains quite certain that no appreciable quantity of air was contained in them. The lungs were very much collapsed when the thorax was opened; they are of a very deep slaty colour, and the same colour is presented on a section being made: the texture of these organs is, however, healthy. The larynx and trachea presented no lesion, and the brain was perfectly normal; the sinuses containing rather a large quantity of non-coagulated black blood.—*Ib.*

Case III.—The *Glasgow Herald* states that recently a young gentleman returned from Australia to visit his relatives in the neighbourhood of Govan, but before leaving the colony he met with a slight accident in the foot, which being, perhaps, neglected during the passage home, caused the great toe-nail to grow into the flesh. To remove the pain and inconvenience, the gentleman resolved to submit to an operation, which a respectable surgeon in Govan was employed to perform on Tuesday last. Preparatory to doing so, the surgeon resolved to make use of chloroform; but the patient, after inhaling the gas, almost instantly expired. An investigation of the affair is in progress.—*Lond. Med. Gaz.*, Jan. 1849.

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73. *Chloride of Olefiant Gas as an Anæsthetic.*—Mr. Nunneley, of Leeds, proposes the chloride of olefiant gas, (Dutch liquid, chloride of acetyle,) as possessing all the good qualities of chloroform, and as being the least irritating of any anæsthetic agent which he has tried. He says that he has tried it upon many dogs and rats, young and old, in large and small doses; in no one instance has he seen any irritation caused by it, nor any repugnance to its inhalation. The animal quickly and pleasantly passes into a profound state of insensibility, and remains so. He states, that a more death-like condition is

recovered from than after chloroform, and in every instance the animals have quickly rallied and remained well, except in one where he intentionally destroyed it to observe the *post-mortem* appearances. Having ascertained the effects upon animals, he inhaled it himself, and found the action not only not disagreeable, but perfectly agreeable in every respect. His assistant, Mr. Beaumont, has taken it once, and his pupil, Mr. Morham, has taken it twice, on two successive evenings; both were rendered as insensible as is either necessary or safe for the performance of any operation whatever, or by whatever agent induced. In neither was there the least irritation; in fact both begged for more before becoming insensible, and when rallying from this condition, and both were immediately well. The latter of the two, who has three times inhaled chloroform, declares the effect of the Dutch oil, both at the time of inhaling and subsequently, to be far more pleasant than that of chloroform. He gave the Dutch oil to four gentlemen: in all it answered admirably, all had previously taken chloroform, and they were unanimous in declaring the oil to be more effectual, pleasant, and speedy, with less uncomfortable feelings afterwards.—*Prov. Med. and Surg. Journ.*, March 7.

Last year, Prof. SIMPSON experimented with this same article, and was the first, we believe, to use it as an anæsthetic, but he was not satisfied with its effects.

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74. *Naphtha as an Anæsthetic.*—Prof. SIMPSON has been latterly experimenting upon light coal tar naphtha as an anæsthetic. It is as powerful as chloroform, but not so pleasant to inhale, and its only advantage is its cheapness. Prof. Simpson believes that the active anæsthetic constituent is benzole.

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75. *Anæsthesia from the local Application of Chloroform.*—Mr. HIGGINSON communicated to the Liverpool Medical and Pathological Society, the case of a lady, aged 25 years, in labour with her first child: the perineum had long been on the stretch by the head, which was tumefied by the pressure: the pain was great with each uterine contraction, but was referred entirely to the perineum, no pain being apparently felt from the uterine contraction itself.

About half a drachm of chloroform was poured upon a handkerchief in the ordinary manner, but instead of being applied to the mouth, it was held in almost immediate contact with the perineum. The pain immediately ceased, though the uterine contractions continued in full force; and the first intimation the patient had of the progress of the labour, was hearing the child cry. Her mind was not at all affected, nor was intellectual consciousness in any degree diminished.

He had observed the same thing, though in a less degree, when the chloroform had been applied to the sacrum in another case.

He had also applied this agent to the os uteri of a patient suffering from very severe dysmenorrhœa, by means of a sponge placed in a curved glass speculum, which was introduced into the vagina. The pain almost immediately abated, and on its return, after some hours, the patient re-applied it herself with similar benefit.

Dr. WATSON mentioned some cases confirmatory of its good effects when locally applied. He had painted it over a swelled testicle, with speedy relief to the pain, and had applied it along the course of the spine with a similar result in a case of acute spinal tenderness, which had not been relieved by other treatment. He had also applied it to the surface of a large mammary abscess prior to opening it, which was afterwards done without suffering to the patient; and also to the vulva of a woman before cauterizing the orifice of the urethra. It had relieved the cramp and collapse in a case of English cholera, when laid upon the epigastrium, and had abated the pain almost immediately when painted round the edge of a surface to which potassa fusa had been applied for the purpose of forming an issue.—*Lond. Med. Gaz.*, Jan. 1849.

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76. *Chloroform in Midwifery.*—The Westminster Medical Society has been occupied during its last three sittings with a discussion on the above important subject. Unusual interest was excited by the occasion, the Society's rooms being nightly crowded with fellows and visitors.

Dr. Snow, in opening the subject, said that the chief objections that had been made to the use of anæsthetics in midwifery were of an *à priori* kind, but that the question ought to be decided by the result of experience. Some objections had arisen from the supposed necessity of inducing a deep state of insensibility, and he was of opinion that if it were requisite to cause the same amount of insensibility in midwifery, as is required in operations in which the knife is used, that would be a valid objection, as he considered that this state could not be continued for two or three hours without injury to the patient. But this amount of insensibility was not required in obstetric practice, unless to arrest or diminish strong uterine action for a few minutes to facilitate turning the child. The suffering attendant on labour might often be greatly relieved, or even altogether removed, without suspending the consciousness of the patient. Towards the conclusion of labour, it was usually necessary to carry the effect of the vapour a little farther, but even then it should not exceed the second degree, or that condition of the patient in which the mental functions are not altogether suspended, but in which there is a dreaming or wandering state of the mind, the patient, nevertheless, usually remaining silent if not spoken to. In labours unassisted by manual or instrumental aid, the auxiliary action of the respiratory and even the voluntary muscles, continued without interruption when the chloroform was well managed. He considered that a medical attendant acquainted with the action of chloroform, and the mode of applying it, might administer it with propriety in all cases in which the pain was either severe or protracted, whether they fell within the division called natural labours or not. Dr. Snow related two cases in illustration of the beneficial effects of chloroform. He used an apparatus in administering it, and gave a little at the beginning of each pain. He disapproved of Dr. Simpson's plan of giving chloroform on a handkerchief, and more particularly of his practice of putting three or four drachms on the handkerchief to begin with. To show the danger of this practice, he alluded to the fatal cases published, and read some notes, furnished to him by Mr. Henry Smith, of a case in which the patient very nearly lost her life from chloroform given in this manner preparatory to an operation. Chloroform was of great service in removing rigidity of the os uteri and of the perinæum, and it had relieved puerperal convulsions in two cases on record. He concluded by remarking, that as all medical men were actuated in their views only by a desire for the well-being of their patients, the difference of opinion in the profession concerning the employment of chloroform in midwifery, ought not to be attended with any acrimonious feelings.

Mr. Greenhalgh related two cases in which he had given the chloroform previous to the use of the forceps. He had no doubt of the great value of the agent in these instances. In two cases of turning he had also employed this medicine with the best effect. He had used chloroform altogether in thirty or forty cases, and had never seen any ill effects result from it.

Mr. I. B. Brown had employed chloroform in fifty-four cases. In all it had been of service. It had been objected to the use of this agent, that it caused the death of the child; but in no instance had this occurred in his own practice.

Dr. Lankester considered that we wanted some further statistical evidence to prove the real value of chloroform in obstetric practice.

Dr. Merriman mentioned a case in which the pulse had fallen to forty in a patient who had taken chloroform in the Westminster Lying-in Hospital.

Dr. E. Murphy spoke at great length on the subject. He proceeded to argue that many of the objections to chloroform had been founded, not so much on the real merits of the agent, as on our ignorance of its true action. Doubtless, further experience was required by many to test its merits, but it must not be supposed by the opponents of this most valuable medicine, that those who employed it used it indiscriminately, or gave it a character to which it was not entitled. What, then, were the cases in which it was to be employed? Certainly not in every natural labour, if it proceeded in that tranquil manner which did not call for interference. In those cases, however, in which there was great mental excitement, arising from extreme suffering, and which interfered with the progress of parturition, chloroform was a great boon; for it must not be supposed for an instant that these were true physiological pains, for they were due to causes of which civilization formed the chief. It was only in savage life

that real labour-pains were present. He summed up the cases in which chloroform was advisable, as those in which it allayed excessive irritability, and mitigated unusual pain—in the operations of midwifery, in which it not only facilitated the proceedings of the obstetrician, but relieved the intensity of the suffering consequent upon such interference. * * * *

Dr. Reid was not an opponent to the use of chloroform in obstetric practice. He had, however, never advocated its employment, and his experience of late had tended to make him think less favourably of it than he formerly did. He entered at some length into three cases in which he had employed it. In the first instance, a lady who had always suffered severely during her first five confinements, in which he had attended her, but in all favourably recovered,—indeed, without a bad symptom,—had in her sixth confinement taken chloroform. He did not believe that it had at all diminished her sufferings, and from that hour to this, a period of three months, she had been a dreadful invalid, suffering from a train of nervous symptoms such as he had never witnessed, and of which Dr. Merriman only recollected one parallel instance in his vast practice, and that was the result of intense drunkenness. The chief symptoms in this case were most distressing sickness and headache. He believed a somewhat similar case had occurred to Dr. Fergusson. In other cases the chloroform had not relieved the pains of labour.—*London Med. Gaz.*, Feb. 2d, 1849.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

77. *Lunatic Asylum, Nantes—Question of Insanity.*—Patients are placed in the lunatic asylum at Nantes, either by their friends or by order of the authorities. The former is entitled *placements volontaires*, a term that does not indicate that the patient has entered of his own free will, although such examples occasionally occur, but that his friends have placed him there on the authority of a medical certificate, which should indicate his mental condition, the symptoms of his disease, and the necessity of treating his case in an asylum, and of keeping him in one. One of the persons thus admitted was a patient there for the second time. His insanity consisted, not in a delirium of words, but of actions; such as sensual appetites, a desire for continual motion, and the purchase of all sorts of articles without utility. M. Verdon, the physician to the asylum, certified that he was insane—that the disease affected the will and the character, rather than the ideas and the judgment, although the reason could not be said to be sound—that the insanity was characterized by a tendency to excesses of all kinds, to extravagant expenditure, and romantic and ridiculous eccentricities. M. Foville, of the Charenton, fully agreed with M. Verdon, that the patient was a fit person to be admitted into the asylum; but, notwithstanding, on the perusal of their certificates, and the reading of a letter written by the person, he was set at liberty by the authorities. The reporter observes on this case, that justice is always unwilling to consider a man insane who can write a reasonable letter, and sustain a long conversation without any wandering in his ideas. Extraordinary actions, excesses, extravagant expenditure, and romantic and ridiculous eccentricities, it refers to a bad education and pernicious habits.

The difficulty of this limitation, however, says M. Bouchet, the reporter, which equally exists for the disease of the intellectual faculties, ought not to prevent our acknowledging this species of insanity, which, without affecting the intellect, acts more especially on the moral principles. Psychologists have distinguished three distinct groups of the faculties of the soul—sensibility, intellect, and the will: sensibility, which comprises the pleasures and the pains, the appetites, the desires, and the more or less reflective tendencies, that is, the sentiments; the intellect, that is, the ideas, the notions, the thoughts; and the will, which comprises the determinations and the resolutions, in a word, action. This latter faculty is the result of the co-operation of the other two, or of one of the two. Sensibility, intellect, and the will decompose in the psychological as in the material order, and act together, or are separated more or less completely in the pathological order. In order that man may be in the full possession of reason, there must be a simultaneous action of these three faculties in

their regular or habitual course; but if, under certain organic dispositions produced by disease, the equilibrium is lost between these different forces, the mental faculties, which comprise the moral as well as the intellectual feelings, are changed in their manifestations, and mental alienation is the result. The conscience itself can no longer prevent the wanderings of the faculties; influenced by internal sensations, it seeks its impressions in the deposed notions and recollections of the intellect, as well as in the deposed feelings of sensibility. With these elements it judges actions; thus it justifies murder with Brutus and Charlotte Corday, suicide with Cato, and persecution with Philip the Second and Robespierre. The lunatic who has a knowledge of the morality of his actions, without the power of controlling them, or preventing their wanderings, judges and thinks rightly, but he feels wrongly; and this perverted feeling, superexcited by disease, commands the will, which directs the action in spite of his judgment, the healthy state of which has rendered it powerless.

It is not, therefore, necessary that a patient should wander in his ideas, judgment, reasoning, and language, in order that he be declared insane; it is enough that he shows it by eccentric and abandoned actions, caused by a diseased imagination, which the judgment is incapable of controlling. If, in the sequestration of the insane, a separation should be made between those whose insanity was indicated by their words, and those who evinced it by their actions, there would be but little room for hesitation. The latter ought to be submitted to sequestration rather than the others, because perversions of the sensibility cause more injury in social life than the perversions of the intellect.

In dementia, the manifestations of insanity are less evident, because all the faculties are merely weakened, (*affaiblis.*) The disorder often ceases, as regards words and actions, but the patient speaks and does little: he replies at greater length than he questions, and his actions are more routine than voluntary. The manifestations of delirium take place only under some excitement influencing the intellect or the sensibility, which gradually become weaker, so as, at last, not to be influenced by any excitant. One can do as one will with these patients, except induce them to reason. They have lost the power of combination. When excited by more or less vivid impressions, the disorder returns, and its manifestations are often dangerous. Of this kind, two or three examples are given in the report. In one of these, the patient, a lawyer, having left an asylum apparently convalescent, while travelling in Switzerland, mixed with society, and also bathed in the sea. The result was, that in a few days, mental delirium was displayed in the form of all kinds of eccentricities, so that he was again placed in an asylum, labouring under insanity and general paralysis, and died, some months afterwards, at Charenton.

The next case exhibits, in a painful manner, the consequences of setting at liberty a man labouring under dementia. The patient was an old advocate; his complaint was demency, with general paralysis; his idea, the extent of his riches. He was placed in the asylum, and an interdiction obtained with respect to his property. Becoming apparently better, he was removed; relapsing, he was admitted into another asylum, whence he was withdrawn, on again improving. He then obtained the withdrawal of the interdiction, and at once plunged into a wild career of speculation, making also ridiculous purchases, until he had ruined his own fortune, and that of his children, when the disease carried him off.

With respect to the sequestration of the insane in asyla, it appears that in France a law passed in 1838, (article 8,) requires the medical man to state in his certificate, not merely the facts of the insanity, but also that the patient's sequestration is necessary, otherwise he cannot be received, unless the insanity be of a character to interfere with the public welfare, or to endanger the lives of individuals. M. Bouchet dwells somewhat on the difficulty of indicating precisely the characters of insanity which render a patient dangerous, and require him to be sequestered. He considers those persons who, in their insanity, offend against public order by wild cries, gesticulations, and menaces, and by causing alarm—the religious, sombre enthusiast, who fancies he does God service by committing murder—and, again, the man who fancies himself pursued and persecuted by imaginary enemies, to be among those who require sequestration; but the patient labouring under dementia, and the quiet idiot, may be, he thinks,

kept under the control of their respective families. Occasionally, he admits, they may revive from their apathy, and cause some annoyance to society, but this, he says, is but momentary, and not of a nature to necessitate sequestration.—*Journal of Psychological Med.*, Jan. 1849, from *Annales Medico-Psychologiques.*

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78. *Early Menstruation and Pregnancy.*—Mr. John Smith relates in the *London Medical Gazette*, (Nov. 1848,) a case of a girl who commenced to menstruate at the age of ten years and six weeks, and had a regular return of the catamenia in somewhat profuse quantity until conception, and at the age of twelve and a half years, she gave birth to a living, and for the most part healthy infant.

MISCELLANEOUS.

79. *On Influenza and Ozone.*—Dr. Spengler, of Eltville, remarks, on the incomplete state of our knowledge of the etiology of epidemic diseases, that the present crude theories of their dependence upon certain indefinite degrees of heat or cold in the weather will no longer be admitted; but that, by following up the discovery of ozone by Schönbein, we shall, having a tangible point whence to start, arrive at the clearness of truth, instead of the darkness which has hitherto hung over the subject.

He states, that in the village of Roggendorf, in Mecklenburgh, towards the close of 1846, slight catarrhal affections became prevalent—that but slight trace of ozone was then to be detected in the air. With the opening of the following year, however, those catarrhal affections assumed the severest forms of tracheal and bronchial disease, and hooping-cough became common, both among children and adults; then re-agents detected a great increase of ozone in the atmosphere, and, at the same time, influenza spread over the district. On the 9th January, the *ozonometer* showed a still further increase in the proportion of ozone present in the air. On the same day two persons died of influenza, and gradually the influenza spread more extensively, until, on the 21st, scarcely an individual had escaped. Thus there seemed a decided connection between the presence of ozone in the air and the spread of the epidemic.

Ozone is formed in the air by the decomposition of its water through disturbances of its electrical equilibrium: hence the peculiar pungent sulphurous and phosphoric odour. The nature and composition remains as yet uncertain. Sulphuric, probably also telluric and selenic acids, and phosphoric acid, destroy it. A very small proportion of the vapours of ether or alcohol, or of olefiant gas, will also prevent its development.

Its best test is iodide of potassium, which will detect its presence in infinitely small quantities in the air. A piece of paper moistened with a mixture of starch and solution of iodide of potassium forms an *ozonometer* far exceeding in delicacy the most accurate galvanometer or the most sensitive nose. The smallest quantity of free ozone (even only in the proportion of a hundred-thousandth), when neither galvanometer nor eudiometer show any change in the air, will be rendered manifest by the discoloration produced by the free iodine.

At the beginning of the epidemic we have noticed there was but slight discoloration: it gradually became darker, till at last the ozonometer exhibited a blackish-brown colour.

As the presence of ozone in the air is due to its electrical decomposition, it is necessarily influenced by its electrical tension.

If the prevalence of influenza and epidemic catarrh be owing to ozone, the vapours of sulphur, or sulphurous gases, must be protective against it. This is confirmed by, while it explains the immunity of, those engaged in or living near sulphur-works.

Dr. Spengler has been induced to publish his observations with the hope of inducing others to make further investigations into the existence and nature of ozone.—*Lond. Med. Gaz.*, Feb. 2, 1849, from *Henle's Zeitschrift*, vol. vii., pt. i.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Case of Trismus Nascentium, illustrative of the influence of position of the patient in the treatment of that affection. By F. W. CLEMENT, M. D., of Delaware. (Communicated by C. W. Pennock, M. D.)

DEAR DOCTOR:—I have recently received the accompanying letter from my friend Dr. F. W. Clement, of Delaware. The facts which he narrates, being strikingly corroborative of the views of Dr. Sims of Ala., in relation to the etiology and treatment of some forms of trismus nascentium, (Vide *American Journal of Medical Sciences*, July 1848, p. 59,) I have much pleasure in communicating them to you. Very truly yours, C. W. PENNOCK.

To Dr. HAYS. 21 Sansom Street. 25th February, 1849.

Brandywine Springs, Feb. 4, 1849.

To C. W. PENNOCK, M. D.

Permit me to give you a brief description of a case which came under my notice, and which excited in me no small degree of interest, in which I have no doubt you will participate.

I was called to see a child of Mrs. C., two weeks after birth, supposed by the family to be labouring under a violent attack of croup (for then two days); they having used all the usual remedies in such cases—viz: squills, Cox's syrup, mustard bath, &c.—without any relief whatever, but on the contrary a steady and regular increase of diseased action: the child now refusing the breast, and entirely incapable of swallowing, thus baffling all efforts on the part of the nurses to afford the little sufferer any relief, or any hope of life. At this stage of the case I was sent for.

Upon entering the room I found the child lying upon its back, in spasms, with a hard, croupy respiration, the head somewhat elevated by means of a large pillow, for the purpose of rendering the breathing less difficult, the head covered with a cap and cradle blanket;—presenting to me an *unusual* form of croup. I had the child taken from the cradle, removed the head coverings, and upon examination found the occipital bone much depressed, the posterior edges of the parietal bones riding over it; forming a strong and well-defined ridge, which at once convinced me I had a case of trismus nascentium. As you may well suppose, I had the child placed upon its side, so as to relieve the posterior portion of the head entirely from pressure: and I sat by my little patient anxious for the result. To my great satisfaction, in less than an hour the spasms entirely ceased, the breathing gradually became more free and easy, and the general appearance of the child gave a strong hope for its life. Before leaving, I had the child replaced in the cradle properly on its side, well supported, so as not to permit it to roll over on its back; and left it with a strict caution to the nurse not to let it change position, and to hold it to the mother's breast with the side of the head resting upon her hand, while she nursed it. My first visit being late in the afternoon, I did not make another visit until

the following morning, when I found my little patient still better, no return of any unpleasant symptom; and the child is now perfectly well, without using a single remedy, save that of position alone.

Yours truly, F. W. CLEMENT.

Ovarian Dropsy cured by the long Abdominal Incision in 1701. By ROBT. HOUSTOUN. (Communicated in a letter from W. L. ATLEE, M. D.)

Philadelphia, January 27, 1849.

DEAR DOCTOR:—In looking over the *Philosophical Transactions*, London, some time since, I met with the following curious and successful case, which seems to have been entirely overlooked by all the writers who have tabulated the cases of ovariotomy. This, no doubt, has arisen from the circumstance that few medical men would think of looking into the pages of a work thus entitled for surgical cases:—and yet it might be well to remark that the medical papers in these transactions often possess considerable value. At the time my table was published in your Journal (April 1845), I flattered myself that I had succeeded in collecting all the cases that had been recorded up to that date; and the credit of the first operation in that table was given by me, as it had been by all others, to L'Ammonier. It would appear, however, from this case that this operation originated with English surgery, as it dates as far back as 1701. I have made a correct copy of it, with the hope that, through your Journal, it may be restored to the profession. It may be found in "*The Philosophical Transactions*, [from the year 1719 to the year 1733,] *abridged, and disposed under general heads.* Vol. vii. p. 541. [London, 1734.]"

Truly yours, &c., WASHINGTON L. ATLEE.

To Dr. HAYS.

"*A dropsy in the left ovary of a woman aged* 58 *years, cured by a large incision made in the side of the abdomen.* By Dr. Robert Houstoun. No. 381, p. 8.—In August, 1701, Margaret Miller, living not far from Glasgow, informed me that her midwife in her last lying-in, at forty-five years old, having violently pulled away the burthen, she was so very sensibly affected by a pain, which then seized her in the left side, between the umbilicus and groin, that she scarce ever had been free from it after, that it had troubled her more or less during thirteen years together; that for two years past she had been extremely uneasy, her belly grew very large, and a difficulty of breathing increased continually upon her; insomuch, that for the last six months she had breathed with the utmost difficulty. That in all that space of time, she had scarce ate so much as would nourish a sucking child; and that for three months together she had now been forced to lie constantly on her back, not daring to move at all, to one side or other.

"This tumour was grown to so monstrous a bulk, that it engrossed the whole left side from the umbilicus to the pubes, and stretched the abdominal muscles to so unequal a degree, that I do not remember to have ever seen the like in the whole course of my practice. It drew towards a point. Her being so long confined to lie continually on her back, having grievously excoriated her, added much to her sufferings, which, with want of rest and appetite, had greatly wasted her.

"I told her that in order effectually to relieve her, I must lay open a great part of her belly, and remove the cause of all that swelling. She seemed not frightened, but heard me without disorder, and pressed me to the operation.

"I drew (I must confess) almost all my confidence from her unexpected

resolution, so that without loss of time I prepared what the place would allow, and with an imposthume lancet, laid open about an inch; but finding nothing issue I enlarged it two inches, and even then nothing came forth but a little thin yellowish serum, so I ventured to lay it open two inches more. I was not a little startled, after so large an aperture, to find it stopped only by a glutinous substance. All my difficulty was to remove it; I tried my probe, I endeavoured with my fingers, but all was in vain; it was so slippery that it eluded every touch, and the strongest hold I could take.

"I wanted, in this place, almost everything necessary, but bethought myself of a very odd instrument, yet as good as the best, because it answered the end proposed. I took a strong fir splinter, wrapped some loose lint about the end of it, and thrust it into the wound, and by turning and winding it, I drew out above two yards in length of a substance thicker than any jelly, or rather like glue that is fresh made and hung out to dry; the breadth of it was above ten inches: this was followed by nine full quarts of such matter as I have met with in steatomatous and atheromatous tumours, with several hydatids of various sizes, containing a yellowish serum, the least of them bigger than an orange, with several large pieces of membranes, which seemed to be parts of the distended ovary. Then I squeezed out all I could, and stitched up the wound in three places, almost equidistant; I was obliged to make use of Lucatella's balsam, which was made by her lady for the use of the poor; with this balsam I covered a pledget, the whole length of the wound, and over that laid several compresses, dipped in warm French brandy, and because I judged that the parts might have lost their spring by so vast and so long a distension, I dipped in the same brandy a large napkin four times folded, and applied it over all the dressings, and with a couple of strong towels, which were also dipt, I swathed her round the body, and then gave her about four ounces of the following mixture:—℞. Aq. Menthæ, ℔j fl. Aq. Cinnamomi, ℔j fl. Syr. Diacodii, ℥vj. M.

"The cinnamon water was drawn off from canary and the best cinnamon; indeed it was the finest and most flagrant cinnamon water I ever tasted: of this mixture I ordered her two or three spoonfuls four times a day.

"Next morning I found her in a breathing sweat, and she informed me, with great tokens of joy, that she had not slept so much nor found herself so well refreshed at any time for three months past. I carefully attended her once every day, and as constantly dressed her wound in the same manner as above, for about eight days together; I kept in the lower part of the wound a small tent, which discharged some serosities at every dressing for four or five days. But business calling me elsewhere, I left her, having first instructed her two daughters how to dress her wound, and told them what diet I thought most proper.

"Her chief food was strong broth made of an old cock, in each porringer of which was one spoonful of cinnamon water; this was repeated four times a day, and gave her new life and spirits.

"After three weeks' absence, I called at her house, and finding it shut up was a little surprised, but had not gone far before I was much more surprised, when I found her sitting wrapped up in blankets, giving directions to some labourers who were cutting down her corn.

"She mended apace, to the admiration of everybody thereabouts, recovered surprisingly, and lived in perfect health from that time till October, 1714; when she died in ten days' sickness.

"That this tumour, or rather dropsy of the ovarium, proceeded from the midwife's rashness in pulling away the placenta, not knowing how to separate

it from the uterus skillfully, seems to me plain from what the woman herself told me, and what fell out afterwards. The placenta adhering fast to the uterus, required more art to bring it away than she was mistress of, which probably induced her to use violence; by which she forced down the fundus uteri, so overstrained the ligaments and all that is appended to them, especially the ligamentum latum of the left side, and its ovarium, which may be reasonably allowed to have been hurt in the relaxation with the rest. Hence the elasticity of these injured parts was not only impaired, but the small lymphatics ruptured, so that the extravasated lympha rushing out, thickened, and not being able to recirculate, dilated the injured ovarium, and thus increased the tumour, and the parts being already excessively distended, and being no longer able to resist the new influx of fresh secretions, ruptured also, and by degrees augmented to that huge and enormous bulk."

DOMESTIC SUMMARY.

On the Development of the Purkinjean Corpuscle in Bone. By JOSEPH LEIDY, M. D.—Schwann, in his "*Mikroskopische Untersuchungen*," considers that the Purkinjean corpuscle of bone is derived from the pre-existing cartilage cell, and that the canaliculi are prolongations, or protrusions of the cell wall. Many later authors, among whom are Gerber, and Todd and Bowman, express the opinion that it originates in the nucleus of the temporary cartilage cell, and Tomes entertains the idea, that after the formation of the osseous tubes, in the process of ossification, the latter are filled up by a deposit of osseous granules, and while this deposit is going on, small cells are left, which are the rudimentary Purkinjean corpuscles. Henle thinks them to be the cavities of cells, the thickened walls of which are pierced by the canaliculi. Hassall confirms the view of Schwann by stating, "the bone cells (Purkinjean corpuscles) are to be regarded as complete corpuscles, the canaliculi of which are formed by the extension of the cell wall, which is proved by watching the formation and development of bone."

The opinion of Schwann and Hassall I can fully corroborate from my own observations upon an ossifying frontal bone, from a human embryo measuring two inches from heel to vertex. Each lateral half of the bone is about 3½ lines in diameter, and presents to the naked eye the appearance of a delicate and close net-work, arising from the numerous areola occupied by temporary cartilage. The frontal and orbital plates, it is worthy of incidental remark, at this period, are nearly on a plane with each other, or are connected together at a very obtuse angle along a central, transverse, crescentic, raised line, the rudimentary supra-orbitar ridge.

The mode of development of the Purkinjean corpuscle, as noticed upon the upper or posterior border of the os frontis, is briefly as follows: After the primitive ossific rete has been formed from the deposit of the osseous salts, enclosing groups of cartilage cells in the areola, the further deposit takes place in a fibrous or line-like course from the parietes of the areola of the primitive osseous rete, in the interspaces of the cartilage cells nearest to, or in contact with the sides of the areola. At this period the cells shoot out or extend their canaliculi between the fibrillæ just formed, and then the cell-wall and continuous walls of the canaliculi fuse with the translucent, homogeneous, or hyaline substance of the cartilage existing between the cells and the osseous fibrillæ, and with the fibrillæ themselves, by the deposit of the osseous salts. The period of the formation of the canaliculi appears to be quite definite, occurring during the deposit of the osseous salts, and not before. To such an extent is this the case, that I noticed in several instances cells which had formed their canaliculi upon the side which was ossified, while upon the other side I could not distinguish any trace of them.

During the whole time of the formation of the Purkinjean corpuscle, the

nucleus remains unchanged; at least no change is perceptible in it beneath the microscope, and by applying tincture of iodine to the preparation, which turns the nucleus brown, I was able to detect it within the perfected Purkinjean corpuscle, not only corresponding to the nucleus of the remaining unossified cartilage cells in granular structure, but also in its measurements. After the Purkinjean corpuscle has been formed a short time, the nucleus dissolves away or disappears.

The newly formed Purkinjean corpuscle is about the same size as the remaining unossified cartilage cells, as indicated in the list of measurements appended to these notes.

Size of cell of temporary cartilage, from the unossified os frontis of a human embryo, $\frac{1}{1886}$ of an inch; nucleus of do. $\frac{1}{3125}$ of an inch; nucleolus $\frac{1}{8333}$ of an inch; Purkinjean corpuscle $\frac{1}{1865}$ of an inch; nucleus within the same $\frac{1}{3035}$ of an inch.—*Proceedings of Academy of Natural Sciences of Philadelphia*, Nov. 1848.

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On the Arrangement of the Areolar Sheath of Muscular Fasciculi and its Relation to the Tendon. By Joseph Leidy, M. D.—Well known is it, that the fasciculi of fibres of the muscles are surrounded by sheaths of areolar tissue, but the arrangement of the filaments of fibrous tissue forming the sheaths, and their relation with the tendon, I think has not been properly pointed out. From repeated observation, I have found that the filaments of fibrous tissue cross each other diagonally around the muscular fasciculi, forming a doubly spiral extensible sheath. None of the filaments run in the direction of the length of the fasciculi, and but few are transverse. Many of the filaments of a sheath form an interlacement in the same diagonal manner with the filaments of the sheaths of neighbouring fasciculi. This arrangement is readily distinguished, if several fasciculi be drawn slightly from each other upon a plate of glass, and the intervening areolar tissue be viewed beneath the microscope. When the filaments reach the rounded extremities of the fasciculi, they become straight, and in this manner conjoin with the tendinous filaments originating at the extremities of the muscular fibres. The importance of this arrangement can be readily understood; from the diagonally crossing course of the areolar filaments, comparatively inelastic in themselves, the sheath is rendered elastic, thus permitting the muscular fibres freely to move without their action being interfered with, while at the point of attachment of the fasciculi, where any elasticity would be worse than useless, from the fact that part of the muscular action would be lost in the mere extension of an elastic substance, we find the filaments arrange themselves so as to become part of the inextensible tendon.—*Ibid.*

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Intermaxillary Bone in the Embryo of the Human Subject.—Dr. Leidy offered the following observations on the existence of the intermaxillary bone in the embryo of the human subject:

The immortal Goethe, I believe, was the first to point out the existence of the os intermaxillare in the human subject, but it has only been observed in an abnormal condition, or where there has been an arrest of development in connection with some cases of hare-lip; and the period of life in which it is found as a distinct piece, and its exact limits, have not yet been accurately determined. The universality of the presence of the os intermaxillare in all animals below man, its presence as a distinct piece in an abnormal condition in man, always defined by a lateral fissure which characterizes it as the incisive bone, and the uniform existence of a transverse fissure behind the incisive alveoli of the os maxillare superius of the human fœtus at birth, have led many anatomists to suspect its normal and independent existence in the embryonic condition of man at an earlier period than it has been sought for.

As the *negro* in his anatomical characters is not so far removed from the embryological condition as the *white*, it is to be presumed that the intermaxillary bone would remain longer distinct; and under such an impression I have several times desired medical students, from our Southern States, whose opportunities of investigating the anatomy of the negro are frequent, to make this a subject of inquiry. Such an opinion cannot be considered unworthy of attention, when

it is recollected that Tschudi mentions the existence of a true os interparietale, as a constant condition, in certain branches of the aboriginal inhabitants of Peru, the Chinchas, Aymaras and Huancas.

Recently having had an opportunity of examining several human embryos, in one of them I was fortunate enough to detect the intermaxillary bone as a distinct and independent piece. This embryo measured one inch and eleven lines from heel to vertex, and I presumed it to be about nine or ten weeks old. In it ossification had already advanced in the superior maxillary and intermaxillary bones sufficiently to give them a determinate form, and their appearance, when magnified, is represented in the figures 1 and 2, which were taken from the specimens through the aid of the camera lucida.

Fig. 1.

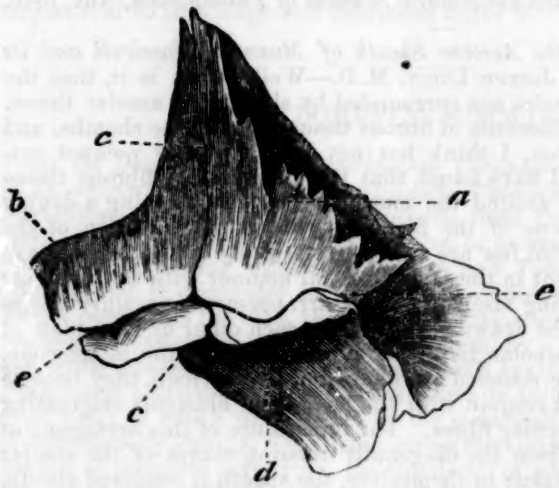

Fig. 2.

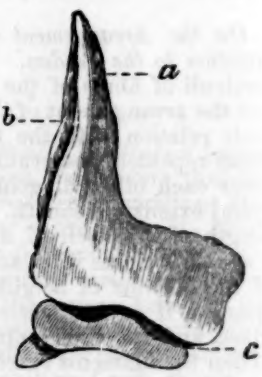

Fig. 1 represents the superior maxillary and intermaxillary bones, much magnified, of a human embryo. The drawing was taken from the right side through the aid of the camera lucida, which reverses its position. *a.* superior maxillary bone; *b.* intermaxillary bone; *c.* line of articulation between the two bones; *d.* palatine process; *e.* alveolar groove.

Fig. 2 represents the antero-inferior surface of the separated intermaxillary bone, much magnified. (From the left side, but reversed by the camera.) *a.* ascending or nasal process; *b.* articulating surface for the superior maxillary bone; *c.* incisor alveoli.

The greatest breadth of the two bones in apposition is one line and two-thirds; the greatest height, being at the ascending or nasal process, is one line. The two pieces present a facial portion, consisting of the ascending or nasal process and part of the body of the bones; an alveolar ridge and groove and a palatine process projecting backward from the superior maxillary bone. They are easily separable at this period, and the articulation passes through the alveolar ridge, at a point corresponding to the separation between the incisor alveoli and the canine alveolus, and extends transversely inwards behind the incisor alveoli, and vertically upwards, dividing the nasal process into two nearly equal portions. On the posterior surface of the nasal process the articulation is at the bottom of a comparatively deep and wide groove, which, however, does not appear to be part of the lachrymal canal, as the latter appears afterwards and external to the former groove. The preparations exhibiting these interesting points which prove the existence of the same law, throughout the animal kingdom, governing the formation of the upper maxillary bones, I present for the inspection of the members of the Academy.

In an embryonic skeleton in the Wistar Museum, measuring three and one-eighth inches in length, and purporting to be about nine weeks old, which,

however, I think too young, the maxillo-intermaxillary articulation is still evident at the ascending process, but it does not divide the latter so equally, being more internal and inferior, apparently from a more rapid development of the nasal process of the true maxillary bone. Just above the alveolar ridge they are already anchylosed together.

In another embryo, in the same museum, measuring three and one-fourth inches in length, the two bones have become firmly united, excepting behind the incisor alveoli, but the line of original separation is readily traced out, from a greater degree of thinness and transparency along its course. The nasal process of the true maxillary bone has so much increased beyond the nasal process of the intermaxillary bone, that the latter no more ascends to the summit of the former, but is considerably inferior and internal.

In the fœtal skeleton, measuring five inches in length, all traces of the inter-articulation have disappeared, except behind the incisor alveoli, which latter portion, as is well known, does not usually disappear until some time after birth, and in some instances is found in the adult cranium.—*Proceedings of Acad. Nat. Sci. of Philadelphia*, Jan. 9, 1849.

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Lithotomy—117 *Calculi weighing* 4½ *ounces Successfully Removed.* By Paul F. Eve, M. D., (*Southern Med. and Surg. Journ.*, March, 1849.)—The subject of this case was a man 43 years of age, who, 25 years ago, was struck on the back by a piece of timber, from which he dates his difficulty in urinating. Two years past his difficulty became so great, that to discharge urine at all, he had to assume the horizontal position, and then with the fingers introduced into the rectum, he pushed up the bladder. A large quantity of matter, he says, is also evacuated by the penis. When he sits upon the edge of a chair he experiences a sensation as of crushing (crepitation) a ball of snow in the perineum.

On the 6th of January, the patient was put under the influence of chloroform, and an incision, about three inches in length, was made over the tumour situated in the perineum, as for the lateral operation, except that it was upon the right instead of the left side. About 56 calculi were removed through this opening, and it was hoped the operation was completed; but upon introducing a female catheter through the wound into the bladder, a second collection of stones was readily detected in this receptacle. A grooved sound was now passed through the urethra and the double lithotome conducted by it into the bladder; the former was withdrawn and the bi-lateral section completed, by drawing the latter instrument out somewhat in the line of the external incision made in the skin. With the lithotomy forceps repeatedly introduced, by conducting it upon the finger, 61 stones were extracted from the bladder. Through the opening in the perineum a quantity of pus was discharged. During the operation, the rectum protruded in a large mass so as to interfere with lowering the handle of the forceps, to seize the calculi in the bladder. The patient also had violent and involuntary contractions of the abdominal muscles, and during the latter stage of the operation the chloroform was discontinued. It lasted one hour.

On the eleventh day the patient was walking out of doors, and on the eighteenth day, he returned home. A month after the operation he was well.

The whole number of calculi extracted was 117, of which the largest weighed ℥ij. and 38 grs.; the two next in size, *each* 78 grs., and the smallest 1 gr.—furnishing an aggregate weight of ℥ivss.

The shape of the calculi was the tetrahedral. Professor Means found them on analysis to consist of phosphate of lime.

Professor Eve notices the following peculiarities in this case. 1st, the cause—an injury to the spinal column, probably by partial paralysis of the bladder favouring a perversion of the function of this organ.

2d. The nature of the calculus—phosphate of lime or bone-earth. This is, he believes, peculiar to disease of the bladder itself. Any calculus may have a coating of phosphate of lime, but when composed throughout of this combination, the evidence is strong, if not conclusive, that the evil originated in the bladder.

3d. The long existence of the disease without its character being detected.

4th. The size and shape of the calculi. They appeared both in the perineum

and bladder to have been regularly impacted, one against the other. Occasionally two, but generally one only was seized by the forceps in their extraction.

5th. The membranous portion of the urethra preserved its integrity, while the bulbous was ruptured by the stones. The two deposits, the one in the perineum and the other in the bladder, were about two inches apart.

6th. The calculi must have all had a common origin—there being no difference in their shape, colour, or composition. Those in the bladder were, however, a little larger than those taken from the perineum. Dr. E. agrees with Professor Means in the opinion, that the[illegible] probably originated in the prostate gland, observing the laws of crystallization [illegible] their subsequent accumulation in the bladder and perineum.

7th. The remarkable fact that Mr. O'Bannon preserved his virile powers. His wife has borne several children, and is now actually seven months pregnant.

8th. The speedy recovery, in certainly, what must be considered quite unfavourable circumstances.

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Case of Inguinal Aneurism—Compression tried without success—Ligature of the Artery.—Dr. W. H. Van Buren relates (*New York Journ. of Med.*, March 1849) a case of inguinal aneurism in a man 25 years of age, of robust constitution, who in March 1848, had been jammed between the wheel of a carriage and a gate post, the former striking his buttock and forcing his groin against the post. Two weeks afterwards he perceived a pulsating swelling in his right groin, which, when he applied to Dr. V. in the following July, had attained the size of an orange.

Having observed, that the pulsations of the tumour were easily controlled by pressure of the trunk of the external iliac artery against the pubes, Dr. Van Buren determined to give pressure a trial. Accordingly he obtained the assistance of a sufficient number of his friends, and commenced pressure with the fingers upon the artery about an inch above the crural arch, on the 1st of August, at 12 o'clock, M., having previously evacuated the bowels, and placed the patient upon a hard mattrass, under the influence of digitalis, by which the pulsations of the heart were reduced to 45 per minute. It was thought better that cold should not be applied to the tumour. During the first eight or ten hours the pressure was accurately kept up, and borne without complaint; some pain and restlessness then occurred, which was measurably relieved by morphia. At the end of twenty-four hours, although the pain was endurable, we found that much more decided pressure was required to restrain the pulsation in the tumour; this difficulty continued to increase, as well as the pain, which became very severe, especially at the time of changing hands, and finally, at midnight on the 2d, after having been faithfully maintained during thirty-six hours, it was found necessary to discontinue the pressure.

The condition of the tumour was apparently unaltered. Some inflammation of the integuments followed, at the point of pressure, which terminated in an impetiginous eruption, and two weeks elapsed before the parts were in a proper condition for the operation.

On the 17th of August, Dr. V. applied a ligature to the external iliac artery, at a point about an inch and a quarter above Poupart's ligament, adopting the operative method recommended by Mott. The patient was placed fully under the influence of a mixture of chloroform and ether.

The slightest possible chill and fever followed, within the first twenty-four hours, after which no morbid symptoms occurred. Adhesion took place in the wound—without any evidence of local inflammation.

The limb retained its natural sensibility, but became about 5° colder than its fellow—which difference in temperature has persisted, with very little diminution, to the present time. The ligature came away on the 17th day, and the slight fistulous opening left by it was entirely closed by the expiration of the third week. At the end of the sixth week the tumour had diminished to the size it possessed when first discovered, and my patient left the city well satisfied with his condition. At this time Dr. V. could discover no pulsation in either of the tibial arteries, although they could be felt to be tense, and apparently filled with blood.

Trephining for Epilepsy.—Dr. J. G. F. Holster relates (*Western Lancet*, Feb. 1849), a case of epilepsy in a female twenty-five years of age, who has been afflicted with the disease for twenty years. On examination of her head, he found a cicatrix on the posterior part of the parietal bone, which she stated had been produced by a stroke with an axe when she was five years of age. On cutting off the hair, a portion of bone, two and a-half inches by one inch, appeared depressed; and the part was excessively tender to the touch, and was often the seat of great pain. Dr. H., therefore, determined to remove the depressed bone, which he did on the 25th of July, which was followed by great relief, the patient saying she had not felt so well for twenty years. At the date of the report, Sept. 11, the wound had firmly cicatrized, and the patient had been free from fits.

Dr. H. performed a similar operation five years before, but without relieving the patient from her disease. In this case a splinter of the inner table of the cranium, an inch long, had passed through the longitudinal sinus.

Some years since, several cases of epilepsy, successfully treated by trephining, were reported by Professor Dudley, of Lexington. (See this Journal for August, 1828, p. 489.)

Iodine in the Treatment of Snake-bites.—Dr. Whitmire states (*North-Western Med. and Surg. Journ.*, Jan. 1849) that he has used the tincture of iodine in cases of the bites of the rattlesnake, viper, and copper-head, in both man and beast, with the effect of putting an entire stop to the swelling and pain of the bitten part in from twelve to sixteen hours. He paints the bitten part over the whole swelling with three or four coats of the tincture twice daily, and should the swelling extend, which it almost always does after the first application, if made soon after the infliction of the wound, he repeats the application. The third application puts a stop to the extension of the swelling, and three or four more will generally restore the limb to its natural state, except, perhaps, sensibility to the touch, and soreness of the muscles.

Cholera in New Orleans.—We extract the following interesting account of the origin and progress of the late visitation of cholera at New Orleans, from a letter by Dr. E. D. Fenner.

"The commencement of the late epidemic," Dr. Fenner states, "may be dated from the 11th of December, when the ship 'Swanton' arrived at this port thirty-nine days from Havre, with 280 steerage passengers, consisting of German and French immigrants—chiefly German. Now, whether it be a mere coincidence that epidemic cholera broke out in this city just at the time when a vessel arrived having some cases of cholera on board, or that said vessel brought the infection, which rapidly spread through the whole community, is an exceedingly debatable question. But let me go on with a statement of such facts and circumstances as I have, before I attempt to debate it. The whole subject is replete with interest. Everything connected with it is new to me, and I will endeavour to make the most rational induction in my power, having no preconceived theory to substantiate.

"For several weeks previous to the arrival of the 'Swanton,' the weather had been changeable—for the most part very warm, though there had been several white frosts. Yellow fever had almost disappeared, and there was but little sickness prevailing; though amongst the existing diseases were observed some remarkable cases of stomach and bowel complaints. On the 5th of December, I attended a gentleman on Custom-house street, who laboured under vomiting, pain and spasms in the bowels, and prostration to such a degree that, if epidemic cholera had been supposed to be here, no person would have hesitated to pronounce him a case. He had no rice water evacuations, but his bowels were rather costive, and he vomited bile; but many such cases have been seen since the epidemic was declared. He recovered after two or three days' illness, and has not been again sick.

"Some days previous to this, three or four negroes were attacked with cholera morbus on the same night and at the same house, in Gravier street. They were promptly treated, and all soon recovered. Similar cases were observed in

the practice of a number of physicians in different parts of the city, all going to show, as it appears to me, that the epidemic influence of cholera was gradually being matured and developed in our midst.

"I have recently learned some other facts, which are worthy of notice in connection with the commencement of this epidemic. The ship 'Guttenburg,' from Hamburg, with some 250 steerage passengers, after a passage of fifty-five days, arrived at New Orleans on the 6th of December. Cholera was prevailing at Hamburg when this ship left, and six or seven deaths from it occurred on board before she got out of the Elbe. As soon as the vessel got out to sea, the disease subsided completely, and no more cases occurred during the whole voyage. As there were no cases of cholera on board when she arrived here, it attracted no attention, although she came from an infected port; but I am informed by one of the visiting physicians of the Charity Hospital, that soon after the epidemic broke out here, a man died in one of his wards, who stated that he had recently arrived from Germany on board a vessel which had lost several passengers by cholera. What became of the other passengers of the 'Guttenburg,' I know not.

"In addition to this I should not omit the following fact, obtained from the records of the Mayor's office and the newspapers of the day, viz: The bark 'Callao,' from Bremen, having 152 German emigrants on board, after a passage of forty-eight days, arrived at New Orleans on the 8th of December, and anchored off Slaughter House Point, on the opposite side of the river. The Secretary of the Board of Health was sent to examine her on the 11th of December, and reported that: 'During the voyage eighteen of the immigrants died, some of whom died with *purging and vomiting*, and others with violent attacks of diarrhœa. The last death occurred on the 30th of November. At present no cases of sickness on board, and those who left the vessel since its arrival are well. N. B.—It is reported in the log-book that the first case that died perished from cholera. This is merely the opinion of those on board, and is not entitled to much weight.'

"The Callao remainedover on the opposite side of the river until about the 4th of January, when she was brought over on this side to be loaded.

"The ship Swanton left Havre on the 2d or 3d of November. *There was no cholera at Havre when she left*, nor have we heard of any since. There was none in any part of France, but the epidemic had reached Germany, and some of the passengers on board the Swanton were German emigrants. Whether they came from an infected district or not, we are not informed. The vessel was out twenty-six days before a death occurred, the first being from consumption on the 28th November. We learn that sixteen or seventeen deaths occurred during the passage, most of them from bowel complaints, supposed to be dysentery. The Swanton reached New Orleans on the 11th of December, and took position at the wharf in the *upper part of the Second Municipality*. On the morning of the 12th, a woman was carried from the ship to the Charity Hospital, and found to be in a complete state of collapse. She was reported to have been attacked the night previous with violent vomiting, purging and cramps.

"The intelligent house surgeon, Dr. Wedderstrandt, as well as a number of other physicians who saw this case, at once recognized it as Asiatic cholera, and the Board of Health was notified of the fact. The woman died at 6 P. M. The Secretary of the Board, Dr. Hester, was immediately despatched for the purpose of examining the condition of the vessel and passengers. He reported the facts above stated, and in addition, that 'he found two old women labouring under bowel complaints, and two children suffering from debility—the ship in a fair condition as regards cleanliness—passengers generally look well.'

"On the morning of the 13th, a man who came over on the same vessel, was brought to the Charity Hospital and found to be in a complete state of collapse. He was cold and pulseless, but his intellect was perfectly clear, and he gave the following account of himself: He said he had a slight diarrhœa on the morning of the 11th, but he walked about the city and ate an apple. On the 12th he left the ship and went to a boarding-house near the Poydras market—still had slight diarrhœa, but ate no fruit this day. After going to bed, was attacked with severe vomiting, purging and cramps—took no medicine and was reduced

to a state of collapse when he entered the hospital. He died about 6 P. M. The books of the hospital show three other cases of cholera admitted on this day, all of which terminated fatally. They were from different parts of the city, and not passengers of the Swanton. On the same day I observed two women in the hospital from the same ship. They had only slight diarrhœa, and were promptly relieved. The two fatal cases were seen by a number of physicians, most of whom felt no hesitation in pronouncing them Asiatic cholera, though a different opinion was expressed by some. The rumour soon spread throughout the city and created great consternation.

"On the evening of the same day (13th December) that the second case was taken to the Charity Hospital, a man who has resided here for many years, and who does business not far from the St. Charles Hotel, came into my office with strong symptoms of cholera. He had not been near the ship Swanton, nor seen any of the passengers. I prescribed for him, and on visiting him at his room, half an hour afterwards, I found him extremely ill, with severe pain in his bowels, copious watery purging, skin bathed in cold sweat, great thirst and general prostration. His condition was so alarming, and he derived so little relief from large and repeated doses of opium, calomel, camphor and capsicum, assisted by sinapisms, stimulating frictions, &c., that I determined to resort to the inhalation of chloroform. By this means he was made perfectly easy in about two minutes, and remained so until the other medicines he had taken had time to act. He got through the night pretty well, and recovered in a few days from a dangerous illness.

"On the 14th December, the Board of Health held a special meeting, and issued a card which appeared in the newspapers the following morning, assuring the public that there was no foundation for the rumour that Asiatic cholera had made its appearance in the city. This statement was seconded by flourishing editorials in several of the newspapers of the day.

"On the 15th December there were eight cases of cholera admitted into the Charity Hospital, and I heard of cases in the private practice of a number of physicians.

"In a letter from a learned physician of this city to a distinguished professor in Paris, which was published in the *Commercial Times* of the 23d inst., the author mentions three fatal cases of cholera that occurred on Custom-house, Bienville, and Chartres streets on the 15th. He goes on to say: 'It is well enough to remark here, that these three primary victims of cholera in New Orleans were all cooks, going every morning, very early, to the principal market in the city, situated on the bank of the river, a cable's length from the infected vessel.' In the latter part of this statement, the worthy author must have made a mistake, for the President of the Board of Health was informed by its secretary, who was sent to examine the Swanton, that he found her in the upper end of the Second Municipality, which is nearly a mile from the aforesaid principal market, frequented by the unfortunate cooks. So these cases must have originated in a different way.

"On the 16th December, there were eleven cases of cholera admitted into the hospital, and the disease was evidently rapidly increasing in private practice.

"On this day I was called to see Dr. J. B. Morgan, of Jackson, Miss., who was attacked the night previous, without having committed any other indiscretion than eating some fish and oysters at dinner. When I arrived at his room, I met Dr. Farrell, who had seen him before, and had good reason to be provoked at the difficulty he found in convincing Dr. Morgan of the danger he was in, and the importance of prompt and vigorous treatment. Dr. M. had already passed about thirty liquid evacuations, then had cramps in his legs, and in fact was on the verge of collapse. Dr. M. being an old friend and neighbour of mine, I joined my entreaties to the arguments of Dr. F., and we did all we could to convince him of the importance of vigorous treatment, but all to no purpose. He insisted that he was not dangerously ill—that he had been similarly affected many a time before, and that if he were not disturbed he would soon be well. The sequel soon verified our worst apprehensions. He was incorrigibly obstinate, dallied too long with a dangerous disease, and was lost.

"The panic now prevailed throughout the city, and vast numbers of people

fled in every direction; yet some of the leading newspapers and a few physicians hooted at the idea that the disease was *Asiatic cholera*, and the Board of Health still kept aloof. From this time the disease increased so rapidly that on the 22d December, ten days from the time when the first case was admitted into the hospital, the number of deaths by cholera in that institution amounted to twenty-two, and in the whole city to forty-five.

"The epidemic raged most severely from the 22d to the 30th of December, having reached its zenith about the 28th, on which day the deaths by cholera were ninety-two. From the 16th to the 22d the weather was oppressively warm, the thermometer rising as high as 84°. From the 22d it was cool, wet, and gloomy, till the night of the 30th, when there fell a white frost. On the morning of the 1st January there was another white frost, and from that time the disease declined steadily.

"The epidemic influence appeared to be felt by almost every person in the city, whether native or foreigners, acclimated or unacclimated. Thousands complained of an extraordinary uneasiness in the stomach and bowels, but in a vast majority of instances it was easily relieved, and but few bad cases occurred amongst those who were prudent and paid proper attention to the premonitory symptoms. The lower classes of people have evidently suffered most, which may be attributed to ignorance or neglect. The mortality at the Charity Hospital has been very great; yet no one can be surprised at it who visited that institution during the epidemic and witnessed the condition in which the patients were when admitted. Cholera is an insidious disease that generally steals upon its victims, seldom declaring itself openly until it has them completely within its fatal grasp. I have not a doubt that seven-tenths of the people who have recently perished of it in this city might have been saved, if they had procured proper medical aid at the onset of the disease. I presume there is hardly a physician in the city who has not been called to persons reduced to the most dangerous condition by relying too implicitly and too long upon some of the various 'specifics' advertised in our newspapers and lauded by the editors.

"The mortality from cholera at its late visitation, compares most favourably with that of 1832, when it first scourged our city. The number of deaths by cholera from the 12th December, 1848, to the 20th January, 1849, as appears from the reports of the Board of Health, amounts to near 1400, five hundred and ninety-six of which occurred at the Charity Hospital. We learn from an interesting Memoir on the Cholera of 1832, addressed to the Academy of Medicine of Paris, by Dr. M. Halphen, a French practitioner of this city at that time, that the disease made its appearance about the 25th of October, in the midst of an epidemic of yellow fever; that in a few days it raged severely, and that in the short space of twenty days it killed about 6000 people. Dr. Halphen says, that the mortality amounted on some days as high as 500 a day. He estimates the full population of the city then at 50,000, and as cholera broke out during the prevalence of yellow fever, ere yet the absent citizens had returned and before the customary visitors dared to come in, he does not think the population at that time exceeded 35,000; thus showing the frightful loss of about *one-sixth of the people in about twenty days.* When we read over these sad details, we may well congratulate ourselves upon our happy deliverance from the late pestilence. True, we have lost about 1400 people, amongst them a few valuable citizens; but what would have been our fate if so malignant a disease as that of 1832 had broken out in December last, when all our own people were at home, and the city was full of strangers? In 1832, *the living could not afford decent burial to the dead.* Dr. Halphen states, that on some days upwards of one hundred corpses were accumulated at the cemeteries, waiting for interment. Large trenches were dug, into which cart loads of uncoffined bodies were heaped indiscriminately; and in the dead of night, a great number of bodies, with bricks and stones tied to the feet, were stealthily thrown into the river. The same ratio of mortality at the present time would demand about twenty thousand victims. Let us turn from the appalling calculation, and thank God that we have been so mercifully spared.

"As in 1832, the epidemic has declined to a stage of comparative security, but the disease has not entirely disappeared. There is as little cholera in New

Orleans at the present time, in proportion to the population, as in any other part of the Lower Mississippi Valley. Whether the epidemic will be rekindled, at the approach of the ensuing summer, remains to be seen. If the miserable condition of the city, as regards cleanliness, will have any influence upon the event, we may certainly expect it. New Orleans must ever continue to be a prey to the most fatal diseases that prevail, until something efficient is done to improve its sanatory condition.

"The manner in which the cholera has spread from this city, in every direction, forms a problem as curious and difficult as that of its first appearance. Almost every vessel that left the city, a few days after the disease commenced, soon had cases aboard, and on some of the steamboats going up the river there were twenty or thirty cases and many deaths. Thus, persons having the disease, and dying of it, were carried to all the landings, towns and cities up the river as high as Cincinnati. In many of these places it spread to a limited extent among the inhabitants; in others it did not. We have as yet heard of no place up the river where the disease has prevailed as an *epidemic*. We learn that cholera is spreading among the plantations along the river, and also in the interior of Louisiana. To some of these the infection appeared to be directly carried; at others it began without any communication with an infected district. The most remarkable mortality that we have heard of, out of the city of New Orleans, occurred in the 8th infantry, a body of 450 soldiers which arrived here from Jefferson Barracks on the 1st of December, and were stationed at the Barracks, about four miles below New Orleans. There they remained till the 12th, when they embarked for Port Lavaca, in Texas, on board the steamships Telegraph and New Orleans. These ships reached Port Lavaca on the 15th, but the men did not land till the 20th December. On the night of the 21st, according to a correspondent of one of our newspapers, the right wing of the regiment, under the command of Brevet Major Gates, moved twelve miles into the country; the left wing, under command of Major Morrison, remaining in Lavaca. During the night the weather changed, from sultry heat to a cold, rainy norther, and by daylight four soldiers of those left in the town were dead with cholera, and many labouring under the disease. On the following day an express came back from Major Gates, with the intelligence that his men were falling rapidly with the same disease. The disease raged with such severity that in the brief space of three or four days 115 men, or about one-fourth of the command, perished. Yet, strange as it may appear, the correspondent informs us that 'no cases occurred among the citizens.' Now these soldiers must have imbibed the morbific cause somewhere, which lay dormant in their systems, like a powerful enemy in ambush, until a fit opportunity was offered for action by the sudden and malign influence of a Texan norther. Then it sprung upon its unsuspecting victims, made dreadful havoc, and in a few days vanished.

"We are informed that cholera has prevailed to a considerable extent at Houston, Texas, whilst Galveston on the sea-board, has escaped, although situated on the line of travel from New Orleans to Houston.

"Soon after the epidemic commenced in this city, a trader on Esplanade street took his negroes (about sixty in number) across the lake and located them in the pine woods, where he hoped they would be perfectly secure. They were all well when they left the city, excepting one case, which terminated fatally on the day of their arrival over there, and continued well for nearly three weeks after reaching their point of destination. The cholera then broke out among them and killed a considerable number in a very short time.

"At the Charity Hospital, probably as many as fifty cases have occurred among the nurses, servants, and persons who had been admitted for other complaints.

"After reviewing the few recent facts which I have just stated, what shall we say about the contagiousness or transportability of cholera? Numberless striking facts recorded in the history of cholera would seem to prove beyond cavil that it may be transported from place to place, through the medium of persons affected. On the other hand, the numerous instances in which the disease failed to be propagated through this medium and the utter futility of rigid quarantine regulations and sanatory cordons in arresting its march, would seem to authorize

a different opinion. Amidst these contending difficulties, if the reader can arrive at a satisfactory conclusion, I can only say he is more fortunate than myself. Speaking of quarantine, perhaps we may hear before long that the city of Natchez, on the river above us, has been protected from cholera by *her* quarantine. I have been informed that there were some fatal cases of cholera in that place. Moreover, I have good authority for saying that the quarantine regulations of Natchez are altogether worthless, except to the officers charged with their enforcement."

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Iron Rod weighing 13¼ pounds driven through the Head—Recovery.—Dr. J. M. HARLOW records in the *Boston Med. and Surg. Journal* (Dec. 13th) the following remarkable case:—

A man, 25 years of age, of vigorous constitution and temperate habits, was charging a hole preparatory to blasting, when the powder exploded, driving the tamping iron against the left side of his face, immediately anterior to the angle of the inferior maxillary bone. Taking a direction upward and backward toward the median line, it penetrated the integuments, the masseter and temporal muscles, passed under the zygomatic arch, and (probably) fracturing the temporal portion of the sphenoid bone, and the floor of the orbit of the left eye, entered the cranium, passing through the anterior left lobe of the cerebrum, and made its exit in the median line, at the junction of the coronal and sagittal sutures, lacerating the longitudinal sinus, fracturing the parietal and frontal bones extensively, breaking up considerable portions of brain, and protruding the globe of the left eye from its socket, by nearly one-half its diameter. The tamping iron is round, and rendered comparatively smooth by use. It is pointed at the end which entered first, and is three feet seven inches in length, one and one-quarter inch in diameter, and weighs 13¼ pounds. The patient was thrown upon his back, and gave a few convulsive motions of the extremities, but spoke in a few minutes. He was carried to an ox cart, in which he rode sitting erect, full three-fourths of a mile to a house. On his arrival there, he got out of the cart himself, and with a little assistance walked up a long flight of stairs, where he was dressed. When seen by Dr. Harlow, an hour and a half after the accident, he was perfectly conscious, but was becoming exhausted from the hemorrhage, which was very profuse both externally and internally, the blood finding its way into the stomach, which rejected it as often as every 15 or 20 minutes. Pulse 60, and regular. His person, and the bed on which he was laid, were literally one gore of blood. Assisted by Dr. Williams, of Proctorsville, who was first called to the patient, Dr. H. proceeded to dress the wounds. From their appearance, the fragments of bone being uplifted and the brain protruding, it was evident that the fracture was occasioned by some force acting from below upward. The scalp was shaven, the coagula removed, together with three small triangular pieces of the cranium, and in searching to ascertain if there were other foreign bodies there, Dr. H. passed in the index finger its whole length, without the least resistance, in the direction of the wound in the cheek, which received the other finger in like manner. A portion of the anterior superior angle of each parietal bone, and a semicircular piece of the frontal bone, were fractured, leaving a circular opening of about 3½ inches in diameter. This examination, and the appearance of the iron which was found some rods distant, smeared with brain, together with the testimony of the workmen, and of the patient himself, who was still sufficiently conscious to say that "the iron struck his head and passed through," was considered at the time sufficiently conclusive to show not only the nature of the accident, but the manner in which it occurred.

The spiculæ of bone having been taken away, a portion of the brain, which hung by a pedicle, was removed, the larger pieces of bone replaced, the lacerated scalp was brought together as nearly as possible, and retained by adhesive straps, excepting at the posterior angle, and over this a simple dressing—compress, nightcap and roller. The wound in the face was left patulous, covered only by a simple dressing. The hands and forearms were both deeply burned nearly to the elbows, which were dressed, and the patient was left with the head elevated, and the attendants requested to keep him in that position.

10 P. M., same evening.—The dressings are saturated with blood, but the

hemorrhage appears to be abating. Has vomited twice only since being dressed. Sensorial powers remain as yet unimpaired. Says he does not wish to see his friends, as he shall be at work in a day or two. Tells where they live, their names, &c. Pulse 65; constant agitation of the lower extremities.

14*th*, 7 A. M.—Has slept some; appears to be in pain; speaks with difficulty; tumefaction of face considerable, and increasing; pulse 70; knows his friends, and is rational. Asks who is foreman in his pit. Hemorrhage internally continues slightly. Has not vomited since 12 M.

15*th*, 9 A. M.—Has slept well half the night. Sees objects indistinctly with the left eye, when the lids are separated. Hemorrhage has ceased. Pulse 75.

8 P. M., same day.—Restless and delirious; talks much, but disconnected and incoherent. Pulse 84, and full. Prescribed vin. colchicum, f℥ss. every six hours, until it purges him. Removed the nightcap.

16*th*, 8 A. M.—More quiet. Pulse 70. Dressed the wounds, which in the head have a fetid sero-purulent discharge, with particles of brain intermingled. No discharge from bowels. Ordered sulph. magnesia ℥j, repeated every four hours until it operates. Iced water to the head and eye. A fungus appears at the external canthus of the left eye.

17*th*, 8 A. M.—Pulse 84. Purged freely. Rational, and knows his friends. Discharge from the brain profuse, very fetid and sanious. Wound in face healing.

18*th*, 9 A. M.—Slept well all night, and lies upon his right side. Pulse 72; tongue red and dry; breath fetid. Removed the dressings, and passed a probe to the base of the cranium, without giving pain. Ordered a cathartic, which operated freely. Cold to the head. He is delirious, with lucid intervals.

19*th*, 8 P. M.—Has been very restless during the day; skin hot and dry; tongue red; excessive thirst; delirious.

20*th and* 21*st*.—Has remained much the same.

22*d*, 8 A. M.—Had a very restless night. Throws his hands and feet about, and tries to get out of bed. Head hot. Ordered a cathartic of calomel and rhubarb, to be followed by castor oil, if it does not operate in six hours. 4 P. M.—Purged freely twice, and inclines to sleep.

23*d*.—Rested well most of the night, and appears stronger and more rational. Pulse 80. Shaved the scalp a second time, and brought the edges of the wound in position, the previous edges having sloughed away. Discharge less in quantity and less fetid. Loss of vision of left eye.

From this time until the 3d of October, he lay in a semi-comatose state, seldom speaking unless spoken to, and then answering only in monosyllables. During this period, fungous growths started from the brain, and increased rapidly from the orbit. To these was applied nitrate of silver cryst., and cold to the head generally. The dressings were renewed three times in every twenty-four hours; and in addition to this, laxatives, combined with an occasional dose of calomel, constituted the treatment. The pulse varied from 70 to 96—generally very soft. During this time an abscess formed under the frontalis muscle, which was opened on the 27th, and has been very difficult to heal. Discharged nearly ℥viij at the time it was punctured.

Oct. 5th and 6th.—Patient improving. Discharge from the wound and sinus, laudable pus. Calls for his pants and wishes to get out of bed, though he is unable to raise his head from the pillow.

7*th*.—Has succeeded in raising himself up, and took one step to his chair, and sat about five minutes.

11*th*.—Pulse 72. Intellectual faculties brightening. When I asked him how long since he was injured, he replied, "four weeks this afternoon, at 4½ o'clock." Relates the manner in which it occurred, and how he came to the house. He keeps the day of the week and time of day, in his mind. Says he knows more than half of those who inquire after him. Does not estimate size or money accurately, though he has memory as perfect as ever. He would not take $1000 for a few pebbles which he took from an ancient river bed where he was at work. The fungus is giving way under the use of the crys. nitrate of silver. During all of this time there has been a discharge of pus into the

fauces, a part of which passed into the stomach, the remainder being ejected from the mouth.

20*th*.—Improving. Gets out and into bed with but little assistance. Sits up thirty minutes twice in twenty-four hours. Is very childish; wishes to go home to Lebanon, N. H. The wound in the scalp is healing rapidly.

Nov. 8*th*.—Improving in every particular, and sits up most of the time during the day. Appetite good, though he is still kept upon a low diet. Pulse 65. Sleeps well, and says he has no pain in the head. Food digests easily, bowels regular, and nutrition is going on well. The sinus under the frontalis muscle has nearly healed. He walks up and down stairs, and about the house, into the piazza, and I am informed this evening that he has been in the street to-day. Strict injunctions given to avoid excitement and exposure.

15*th*.—Gage has been in the street every day except Sunday, during the past week. His desire to be out and to go home has been uncontrollable by his friends, and he has been making arrangements to that effect. Yesterday he walked half a mile, and purchased some small articles at the store. The atmosphere was cold and damp, the ground wet, and he went without an overcoat, and with thin boots. He got wet feet and a chill. I find him in bed, depressed and very irritable. Hot and dry skin; thirst; tongue coated; pulse 110; lancinating pain in left side of head and face; rigors, and bowels constipated. Ordered cold to the head and face, and a black dose to be repeated in six hours, if it does not operate. He has had spiculæ of bone pass into the fauces, which he expelled from the mouth within a few days.

16*th*, A. M.—No better. Cathartic has operated freely. Pulse 120; skin hot and dry; thirst and pain remain the same. Has been very restless during the night. Venesection f℥xvj. Ordered calomel, gr. x, and ipecac. gr. ij, followed in four hours by castor oil.

8 P. M., same day.—Purged freely; pulse less frequent; pain in head moderated; skin moist. ℞.—Antim. et potassa tart., gr. iij; syr. simplex, f℥vj. Dose, a dessert spoonful every four hours.

17*th*.—Improving. Expresses himself as "feeling better in every respect;" has no pain in the head.

18*th*.—Is walking about house again; says he feels no pain in the head, and appears to be in a way of recovering if he can be controlled.

1849, *Jan.* 3*d*.—The patient is now at Lebanon, N. H., walking about the house, and riding out, improving both mentally and physically.

Death from Pressure of an enlarged Thyroid Gland.—Dr. F. H. Hamilton presented to the Medical Society of the State of New York (Feb., 1849) a cast in plaster of an enlarged thyroid gland, with the trachea attached, which had been removed from a patient after death. Dr. Hamilton stated the history of the case to be as follows. During more than twenty years the patient, the Rev. Mr. Walker, of Dansville, had suffered from occasional paroxysms of difficult breathing, which he at first supposed to be asthma. The difficult respiration had, however, gradually increased, accompanied with a steady enlargement of the thyroid gland, especially on the right side. During several months preceding his death his sufferings were extreme and unremitting, and the most skilful treatment failed to afford the least permanent relief. A few weeks, however, before the fatal event, he had experienced temporary relief from a sudden discharge of a small quantity of grumous matter through the trachea.

Dr. Hamilton saw him in the early part of January, 1849. At this time he had not slept for several days, except when for a minute or two, he voluntarily suspended the act of respiration. The trachea was pressed forcibly to the left, being displaced in this direction about one inch. Upon consultation it was determined that in this condition he could survive but a few hours, and that an operation was demanded. Dr. Hamilton, knowing well the formidable character and connections of the tumour he had to deal with, did not at any time propose to remove the gland, but suggested the possibility of prolonging life by removing the pressure of the muscles and fascia which bound it against the trachea. Accordingly he cut across the neck, from the posterior edge of

the sterno-cleido-mastoid to the centre of the trachea, traversing all the textures down to the tumour. But neither this nor the elevation of the tumour with the tenaculum diminished the difficulty of breathing. He then dissected up and cut off that portion which lay in front of the trachea. But the breathing continued the same. With two ligatures and applications of snow the hemorrhage from the incision upon the gland was soon arrested. It now became apparent that the trachea was permanently narrowed by the long and continued pressure, and the operation of tracheotomy was made below the tumour as a final and only resort. Through this opening he continued to breathe quietly and freely until his death, which occurred three days after.

The *autopsy* disclosed the following facts. The right thyroid lobe enlarged to about five inches in its transverse diameter and degenerated; containing several imperfectly formed cysts filled with grumous matter. One of these cysts, with a portion of the hypertrophied structure, was situated directly behind the trachea, occupying all the space between the cricoid cartilage and the 6th or 7th cartilaginous ring, and encroaching upon the tube from this direction so as to effect an almost complete closure; leaving only an opening of about two lines in diameter. The left lobe was also considerably hypertrophied, and degenerated in the same manner with the right.—*Trans. Med. Soc. State of N. York*, 1849.

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Superfœtation and Mixed Births.—Dr. Thomas B. Taylor, of Princeton, Miss., relates (*N. O. Journ.*, Nov. 1848) the following as a case of superfœtation. Clarissa, a negress, the property of Mr. A. Knox, aged about 35 years, in May last was delivered of twins; one a mulatto, and the other a negro child. She had been married to a negro man on the plantation, of delicate constitution, for many years, and had had several children by him. Her menstrual discharge had occurred for several months previous to her pregnancy, at about the full of the moon. She felt herself pregnant by her customary signs, about the middle of the month; and, to confirm her suspicions, at the next period it did not appear. About three weeks from the time she first felt she had conceived, and one week after her menses had failed to appear, she had sexual intercourse *once* with a white man. She slept with her husband every night—had connection with him the night before she had intercourse with the white man, but not on the same night. At their birth the mulatto child bore marks of being at least three weeks younger than the negro; thus sustaining the woman in her suppositions, as to the time between her two conceptions. This woman is a faithful servant, and I have every reason to believe she told the truth in relating the circumstances of her case to me.

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Cases in which a large quantity of Chloroform was used.—Professor Jackson related a case in which a remarkable quantity of chloroform was used. A lady labouring under a stricture of the upper portion of the rectum which prevented the flatus from passing, became, in consequence, the subject of an enormous distension of the abdomen, attended with so great a degree of sensitiveness that the use of palpation and percussion were entirely precluded, and her case was at first involved in no little obscurity.

In the latter part of the month of December, 1845, she was attacked by a violent convulsive paroxysm, preceded by a very peculiar spasmodic affection, consisting in a cracking of the head of the humerus in the glenoid cavity, and of the femur in the acetabulum; these spasmodic symptoms continued for about fifteen minutes, when general convulsions set in, accompanied with intense pain. On the first of January, 1846, an attack of spasms occurred and continued for several hours; the urine was retained from a spasmodic affection of the neck of the bladder and urethra, the orifice of which latter was so much retracted that it was difficult to introduce a catheter to relieve the distension of the bladder. A few drops of chloroform were given to the patient to inhale, and prompt relief was experienced. The use of the chloroform was continued daily for two or three weeks, the quantity being gradually increased as the effects diminished. Dr. J. was sent for one morning and found the mother of the lady in great alarm in consequence of the quantity of the chloroform which her daughter had taken.

She had inhaled two ounces in the course of the evening, then two ounces more, and an additional ounce in the course of the night; being five ounces inhaled from 5 o'clock P. M. until 10 o'clock of the ensuing morning. Dr. J. found her with a feeble pulse, diminished temperature of the body, and considerable excitement of mind. She insisted upon having more of the ether to inhale. She remained cold and nearly pulseless for forty-eight hours; when all effects of the inhalation disappeared, and, what is remarkable, since that time she has had no return of her spasms. Upon one occasion having a tooth taken out, the pain of the operation caused a tendency to their return, but this went off without the spasms occurring.—*Trans. Phila. College of Phys.*, Vol. ii. No. vi.

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Local Anæsthesia in Neuralgia.—Dr. Hays stated, that he had employed the chloroform to produce local anæsthesia with apparently the most happy effects, in a case of neuralgia, occurring in a gentleman fifty years of age, who had been for a long time a sufferer from neuralgia of the foot, in which all the remedies that had been previously employed failed to produce relief. Dr. H. was called to this patient about eight days since, and found him in intense pain, which had deprived him of sleep the whole of the preceding night. Dr. H. directed the affected parts to be enveloped with a pledget of lint or a few folds of muslin wet with chloroform, and the whole to be covered with a portion of oiled silk to prevent evaporation; on the next morning he found him entirely free from pain, which has not since returned. Whether the relief experienced in this case is to be ascribed to the local anæsthesia produced by the chloroform, or is to be considered as a mere coincidence, Dr. H. does not pretend to decide.—*Ibid.*

Since this communication was made to the College, the further history of this case has shown that an arrest of the paroxysm is always accomplished by the application of the chloroform; and to the use of the article, several other similar cases have been attended with like results.

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Chloroform in Nephritic Colic.—Dr. Stille stated, that last spring, Dr. Bowditch, of Boston, related to him a case of nephritic colic, occurring in an individual who had previously suffered from several attacks, in which the chloroform had been administered with the effect of inducing entire relief of the pain, without abolishing consciousness. The influence of the chloroform was kept up for several hours, when, at length, the stone passed through the ureter. Within the last three weeks a lady, about twenty years of age, after retiring to bed some hours, was attacked with violent pain in the region of the right kidney. About an hour afterwards (1 o'clock, A. M.) Dr. Stillé was sent for. The mother had applied warm fomentations to the loins, and immersed the feet in a mustard bath. There was still intense pain, with tenderness over the region of the right kidney. The patient was lying bent double, her hands and feet were cold, her pulse feeble, and about sixty in the minute. The pain extended in the direction of the ureter; there was pain and a twitching motion of the right thigh, with frequent inclinations to urinate. From a review of the symptoms, Dr. S. considered the case to be one of nephritic colic. The use of ether was suggested. A teaspoonful was poured upon a handkerchief and inhaled for five minutes, when the patient fell asleep. In about fifteen minutes she was aroused by a return of the pain. The ether was again inhaled, and its impression was kept up for about an hour, without carrying it so far as to abolish consciousness; the pain ceased, the extremities became warm, and the pulse rose to seventy-five. The next morning there was no pain complained of, but considerable soreness was experienced when pressure was made over the right kidney. The pain did not return until two nights afterwards; when a larger dose of the ether was used, by the patient, without Dr. Stillé's presence or direction, but from some cause, it did not produce the same alleviation of the pain as before. At 4 o'clock in the morning Dr. S. saw her. The pain had by this time somewhat abated, and upon the administration of an opiate enema complete relief was procured. The pain has not since returned. No calculus was passed, so far, at least, as could be ascertained.—*Ibid.*

[*Army Surgeons.*—We take pleasure in giving place to the following circular issued by the distinguished Surgeon-General U. S. A. It shows that justice has at last been awarded to our gallant brethren of the army, and we trust that the same will be granted to our equally gallant and meritorious brethren of the other arm of our national defence.]

Circular.—Surgeon-General's Office, February 7, 1849.—SIR: The position to which the Medical Staff of the Army has attained after a long struggle against prejudice and error, and in opposition to views entertained by some high in authority, is a gratifying illustration that "truth is powerful and will ultimately prevail."

The Officers of the Medical Department may now rest satisfied that their position in the Army cannot be successfully assailed by arguments addressed to the reason; and that if driven from the ground they now occupy, it can only be through the temporary triumph of prejudice and authority over truth, reason, and justice. Conscious of the soundness of their claims to military rank, the members of the Corps will hold themselves prepared to meet any issues that may arise between themselves and others in authority; and appealing to law and regulation, resolve "to ask for nothing but what is right, to submit to nothing that is wrong."

While it is confidently anticipated that the senior officers of the Department will be governed by a sound discretion, and always pursue the course best calculated to secure their rights, it is deemed expedient to call the attention of its junior members to some considerations which may aid their inexperience and lead them to a correct appreciation of their military position.

On the day of his appointment, an Assistant Surgeon is invested by law* with the rank of First Lieutenant. This rank will give him precedence (except where military command is implied) of all Second Lieutenants, and of all First Lieutenants whose appointments as such date subsequent to his own commission.

On all details, then, for Courts Martial, Military Boards, and other mixed commissions where military command is not involved—each member acting independently, and giving his vote free from military control—the rank of the Medical officer will take effect; and against any order convening such Boards, &c., which embraces him in the detail without a recognition of his military position, it is his duty firmly yet respectfully to protest.

It is enjoined upon all Medical officers to take, in a conciliatory spirit, a decided stand upon this point at the very outset; and for the reason that encroachment promptly met will be more promptly checked; while any evidence of irresolution, or want of confidence in the correctness of their position, might lead to further aggression.

The time is propitious for the acknowledgment of the claims of the Medical Staff to a specific military position. During the late war with Mexico, their conduct in the field was the subject of high commendation; and there is a current of feeling in their favour which, if not diverted from its course by acts of indiscretion on the part of the officers themselves, will go far to remove the prejudices which have hitherto opposed the recognition of their rights.

Hereafter, but few military men will be disposed to regard the Medical Department as a subordinate branch of the Military Establishment, and less entitled to consideration than other staff departments of the Army. There are some, it is true, who will never be able to escape from the thraldom of opinions formed in early life; but the great body of well informed military men will, it is believed, ultimately acknowledge the correctness of the views herein set forth. Let the officers of the corps, therefore, studiously avoid everything which might exasperate feelings, and give stimulus to opposition.

* "And that the rank of the officers of the Medical Department of the Army shall be arranged upon the same basis which at present determines the amount of their pay and emoluments: *Provided*, That the medical officers shall not in virtue of such rank be entitled to command in the line or other staff departments of the Army."—*Laws of the U. S., passed at 2d Sess. 29th Congress, Chap. 8, and part of Sec. 8, of an act to raise, for a limited time, an additional military force, and for other purposes.* Approved February 11, 1847.

Recollecting that the same law which gives officers of the Medical Staff military rank, excludes them from the right of command in the line or other staff departments of the Army, let them be careful to abstain from any assumption of authority in which they cannot be sustained by the regulations of the Army or the laws of the land.

Protected as they now are from all degrading disabilities, and independent in their own sphere of action, let them, by a faithful devotion to their official duties, and a rigid observance of their high moral obligations to the community in which they move, illustrate the merits of the Corps.

By such a course of conduct steadily pursued, opposition will be disarmed, and the Medical Staff will continue to advance in the respect and the confidence of the whole Army. I am, Sir, very respectfully,

Your obedient servant,

TH. LAWSON, *Surgeon-General.*

In further illustration of the views set forth in the foregoing Circular from the Surgeon-General's Office, the following order from the Head Quarters of the 1st and 3d Military Departments is hereto appended:

HEAD QUARTERS 1st and 3d MILITARY DEPARTMENTS,

Troy, N. Y., January 24th, 1849.

CIRCULAR.

The following opinion of the major-general commanding the Eastern Division, concurred in by the Secretary of War, is published for the information and guidance of all concerned:

"With reference to Act February 11th, 1847, Section 8, it is my opinion that the detail of Lieutenant Winder over Assistant Surgeon Henderson was wrongfully made—that Act having evidently changed the principle of paragraph No. 5 of the Regulations of 1841, which prohibited Staff officers, without army rank, being detailed as Presidents of mixed Boards, or Councils."

In accordance with the views set forth in the above opinion, medical officers detailed upon Boards and Councils, will take precedence according to the rank assigned them by the law above referred to.

By command of Major-General WOOL.

(Signed) O. F. WINSHIP, A. A. G.

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